### McMILLEN ENGINEERING

#### CIVIL ENGINEERS

115 Wayland Smith Drive • Uniontown • Pennsylvania • 15401 Phone 724-439-8110 Fax 724-439-4733

### **NEMACOLIN WOODLANDS RESORT CASINO**

### TRAFFIC IMPACT STUDY AMENDMENT

Wharton Township, Fayette County Pennsylvania

November 2006

Prepared for: NWL Company 1001 LaFayette Drive Farmington, PA 15445

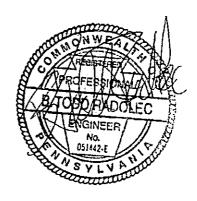
Prepared by:

McMILLEN ENGINEERING INC.

115 Wayland Smith Drive
Uniontown, PA 15401

724/439-8110

fax 724/439-473



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#### REFERENCE MATERIAL

- 1. Highway Capacity Software (HCS+) Release 5.2 University of Florida.
- 2. Chapter 201 Engineering and Traffic Studies, Title 67 of the Pennsylvania Vehicle Code, Transportation, Pennsylvania Department of Transportation, December 1993.
- 3. Highway Capacity Manual, Transportation Research Board, Washington, D.C., 1997.
- 4. A Policy on geometric Design of Highways and Streets, 1990, American Association of State highway and Transportation Officials.
- 5. ITE Trip Generation Manual 7th Edition.
- 6. PennDOT Publication 282.

#### **APPENDICES**

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- 2. Capacity Analysis (2006 Developed Conditions)
- 3. Capacity Analysis (2016 Base Conditions)
- 4. Capacity Analysis (2016 Developed Conditions)
- 5. Signal Warrant Analysis

#### I. INTRODUCTION

On behalf of NWL Company, McMillen Engineering performed an amendment to the traffic impact study for the proposed casino at Nemacolin Woodlands Resort. This amendment has been completed to analyze all of the study intersections using the newest version of HCS (HCS+ Release 5.2). The use of the new software had minor effects to the results and all of the recommendations from the approved study will remain the same.

	LE 1 ATION DATA
City / County	2000 Census*
Uniontown	12,422
Fayette	148,644
Westmoreland	369,993
Washington	202,897
Greene	40,672
Somerset	80,023

<sup>\*2000</sup> census population (critical) used in traffic distribution calculations.

	TABLE 2 DEVELOPMENT COMPONENTS TRAFFIC IMPACT STUDY	
ITE Number	Development Component	Description
473	Casino	500 slots
815	Outdoor Store	54,000 sf

#### TABLE 3

### PROJECTED TRIP GENERATION NEMACOLIN WOODLANDS RESORT CASINO

Wharton Township, Fayette County, Pennsylvania Prepared by: McMillen Engineering Inc.

#### PROJECTED VEHICLE TRIP GENERATION (1)

				Weekday	Peak PM	Hour (3)	Saturday	Peak Ho	ur (4)
Development Component	Size	ITE Code (5)	Average Weekday Daily Traffic (2)	Enter	Exit	Total	Enter	Exit	Total
Casino	500 slots	473		155	140	295	170	150	320
Outdoor Store	54,000sf	815	3000	148	147	295	208	201	409

<sup>(1)</sup> Trip generation rates based on Institute of Transportation Engineers, Trip Generation Manual 7th edition and Information provided by PADOT 12-0.

<sup>(2)</sup> Average weekday daily traffic volumes projected to be generated during a typical weekday (total trips entering and exiting)

<sup>(3)</sup> Trips shown for weekday PM peak hour of generator. The projected trips are applied to the peak hour of adjacent street traffic.

<sup>(4)</sup> Trips shown for saturday peak hour of generator. The projected trips are applied to the peak hour of adjacent street traffic.

<sup>(5)</sup> ITE land use code from Institute of Transportation Engineers, Trip Generation Manual 7th edition

#### II. BASE TRAFFIC ANALYSIS

#### A. Traffic Impact Study Findings

The following approach levels of service (LOS) were observed for each study intersection.

#### 1. SR 0040 /SR 0381 S

- LOS E Weekday PM peak hour 2006 conditions without development
- LOS E Weekday PM peak hour 2006 conditions with development
- LOS D Saturday peak hour 2006 conditions without development
- LOS D Saturday peak hour 2006 conditions with development
- LOS F Weekday PM peak hour 2016 conditions without development
- LOS F Weekday PM peak hour 2016 conditions with development
- LOS E Saturday peak hour 2016 conditions without development
- LOS D Saturday peak hour 2016 conditions with development

#### 2. SR 0040 / SR 0381 N

- LOS D Weekday PM peak hour 2006 conditions without development
- LOS D Weekday PM peak hour 2006 conditions with development
- LOS E Saturday peak hour 2006 conditions without development
- LOS D Saturday peak hour 2006 conditions with development
- LOS E Weekday PM peak hour 2016 conditions without development
- LOS E Weekday PM peak hour 2016 conditions with development
- LOS F Saturday peak hour 2016 conditions without development
- LOS E Saturday peak hour 2016 conditions with development

#### 3. SR 0040 / Hawes Road

- LOS C Weekday PM peak hour 2006 conditions without development
- LOS C Weekday PM peak hour 2006 conditions with development
- LOS C Saturday peak hour 2006 conditions without development
- LOS C Saturday peak hour 2006 conditions with development
- LOS D Weekday PM peak hour 2016 conditions without development
- LOS D Weekday PM peak hour 2016 conditions with development
- LOS C Saturday peak hour 2016 conditions without development
- LOS C Saturday peak hour 2016 conditions with development

#### 4. SR 0040 / Secondary Driveway

- LOS -- Weekday PM peak hour 2006 conditions without development
- LOS C Weekday PM peak hour 2006 conditions with development
- LOS Saturday peak hour 2006 conditions without development
- LOS C Saturday peak hour 2006 conditions with development
- LOS -- Weekday PM peak hour 2016 conditions without development
- LOS C Weekday PM peak hour 2016 conditions with development
- LOS -- Saturday peak hour 2016 conditions without development
- LOS C Saturday peak hour 2016 conditions with development

#### 5. SR 0040 / Casino (main) Driveway and Marker Road

- LOS B Weekday PM peak hour 2006 conditions without development
- LOS B Weekday PM peak hour 2006 conditions with development
- LOS C Saturday peak hour 2006 conditions without development
- LOS B Saturday peak hour 2006 conditions with development
- LOS C Weekday PM peak hour 2016 conditions without development
- LOS B Weekday PM peak hour 2016 conditions with development
- LOS C Saturday peak hour 2016 conditions without development
- LOS B Saturday peak hour 2016 conditions with development

#### 6. SR 0040 / Smith School House Road

- LOS C Weekday PM peak hour 2006 conditions without development
- LOS C Weekday PM peak hour 2006 conditions with development
- LOS C Saturday peak hour 2006 conditions without development
- LOS C Saturday peak hour 2006 conditions with development
- LOS C Weekday PM peak hour 2016 conditions without development
- LOS C Weekday PM peak hour 2016 conditions with development
- LOS C Saturday peak hour 2016 conditions without development
- LOS C Saturday peak hour 2016 conditions with development

#### 7. SR 0040 / SR 2011 (Dinner Bell Road)

- LOS D Weekday PM peak hour 2006 conditions without development
- LOS D Weekday PM peak hour 2006 conditions with development
- LOS C Saturday peak hour 2006 conditions without development
- LOS C Saturday peak hour 2006 conditions with development
- LOS E Weekday PM peak hour 2016 conditions without development
- LOS E Weekday PM peak hour 2016 conditions with development
- LOS D Saturday peak hour 2016 conditions without development
- LOS D Saturday peak hour 2016 conditions with development

#### III. EXISTING TRANSPORTATION SYSTEM

#### A. Existing Traffic Volume Peak Hours

Data was collected for turning movements in the study area during Friday and Saturday peak hours. The study considers the weekday PM and Saturday peak periods.

TABLE 4 PEAK HOUR SUMMARY					
Intersection Peak Weekday PM Peak Saturday Al					
All.	4:45 – 5:45	10:45 - 11:45			

#### B. Traffic Signal Warrant Analysis

The need for a traffic signal at a particular intersection is based upon criteria in Chapter 201, Engineering and Traffic Studies<sup>2</sup>, of the Pennsylvania Code, Title 67, under traffic Signal Warrants, Signalization is based on factors such as traffic volumes, vehicular movements, capacity analysis, speed data, and accident analysis. One or more of the traffic signal warrants must be met to justify a traffic signal.

A traffic signal warrant analysis has been performed for the intersection. The site driveway does warrant a traffic signal.

Results of the Warrant Analysis are presented in Appendix 5.

#### C. <u>Highway Capacity Analysis</u>

The Highway Capacity Manual<sup>3</sup> defines capacity analysis as a set of procedures used to estimate the traffic-carrying ability of a facility over a range of defined operational conditions. The operations conditions are described in terms of a letter from "A" to "F" with "A" being the most desirable condition. A description of the various levels of service is outlined in the Highway Capacity Manual.

The level of service at signalized intersections measures the average stop delay time per vehicle and also the volume to capacity ratio as it relates to the specific intersection. The capacity ratio compares the peak hour traffic volumes to the theoretical maximum traffic volumes that the facility can accommodate.

The level of service for an un-signalized intersection measures the delay to turning traffic to find a gap in a major street traffic flow to allow for the successful completion of the desired turning movement. The critical movements at un-signalized intersections are left turns on the main streets and left turns on the side streets.

Capacity analyses were performed for the weekday PM and Saturday Peak periods at the study intersections. The capacity analysis results are provided in detail in Appendix 2 through 5.

Capacity analyses were performed for 2006 and 2016 weekday peak PM and Saturday peak periods. Results of the analysis are compared for base and developed conditions. Summaries of the traffic volume and levels of service are presented in Figures 6 -9 and Table 5.

#### IV. DESIGN CONDITIONS

#### A. <u>Design Year and Assumptions</u>

The future year of 2016 was selected as the design year based upon the PaDOT policy of designing improvements for ten years beyond the proposed development. Additional assumptions include the traffic growth rate, current Transportation Improvement Program (TIP) items, and traffic volumes generated by other developments in the study area or close vicinity.

The traffic growth rate of 1% per year was obtained from the Southwestern Pennsylvania Regional Planning Commission (SPC).

#### B. Recommendations

McMillen Engineering recommends the improvements to the corridor as outlined in the analysis and this report. The improvements include:

#### 1.' SR 0040 / Casino (Main) Driveway

> Install medium volume signalized driveway with left turn lanes for both Route 40 approaches.

### TABLE 5 INTERSECTION LEVEL OF SERVICE SUMMARY 2006 CONDITIONS

SR 0040

Wharton Township, Fayette County, Pennsylvania Prepared by: McMillen Engineering Inc.

		erve Capacity (Ui	s of Delay (Signaliz nsignalized Intersec		
Intersection/Approach/Movement				day Peak	
SR 40 / SR 381S	Undeveloped	Developed	Undeveloped	Developed	
SR 40 Westbound					
Left Turns and Throughs	A / 9.1	A / 9.1	A / 9.6	A / 9.5	
SR 381S Northbound					
Left and Right Turns	E/37.8	E/37.0	D / 27.7	D / 25.4	
Approach	E / 37.8	E/37.0	D / 27.7	D / 25.4	

# TABLE 5 INTERSECTION LEVEL OF SERVICE SUMMARY 2006 CONDITIONS SR 0040

		erve Capacity (Ui	s of Delay (Signaliz nsignalized Intersed anditions		
Intersection/Approach/Movement	Weekday	PM Peak	Saturday Peak		
SR 40 / SR 381N	Undeveloped	Developed	Undeveloped	Developed	
SR 40 Eastbound					
Left Turns and Throughs	A / 8.9	A / 8.9	A / 8.9	A / 8.8	
SR 381N Southbound					
Left and Right Turns	D / 29.0	D/30.0	E / 35.5	D / 30.2	
Approach	D / 29.0	D / 30.0	E / 35.5	D/30.2	

## TABLE 5 INTERSECTION LEVEL OF SERVICE SUMMARY 2006 CONDITIONS

SR 0040

Wharton Township, Fayette County, Pennsylvania Prepared by: McMillen Engineering Inc.

	Level of Service/Average Seconds of Delay (Signalized Intersection) or Reserve Capacity (Unsignalized Intersections)  2006 Conditions				
Intersection/Approach/Movement	Weekday	PM Peak	Saturday Peak		
SR 40 / Hawes Rd.	Undeveloped	Developed	Undeveloped	Developed	
SR 40 Eastbound	·.				
Left Turns and Throughs	A / 8.4	A / 8.4	A / 8.5	A / 8.4	
Hawes Rd. Southbound		<u>.                                    </u>		! !	
Left and Right Turns	C / 20.9	C / 20.8	C/20.9	C / 19.4	
Approach	C / 20:9	C / 20.8	C/20.9	C / 19.4	

## TABLE 5 INTERSECTION LEVEL OF SERVICE SUMMARY 2006 CONDITIONS

SR 0040

	~		<del></del>	
		erve Capacity (Ur	s of Delay (Signaliz nsignalized Intersec onditions	
Intersection/Approach/Movement	nent Weekday PM Peak		Saturday Peak	
SR 40 / Secondary Drive	Undeveloped	Developed	Undeveloped	Developed
SR 40 Eastbound			·	
Left Turns and Throughs	7.7	A / 8.3	77.40	A / 8.3
Secondary Dr Southbound				
Left and Right Turns		C / 15.2		C / 15.3
Approach		C / 15.2		C / 15.3

#### TABLE 5 INTERSECTION LEVEL OF SERVICE SUMMARY 2006 CONDITIONS

SR 0040

Wharton Township, Fayette County, Pennsylvania Prepared by: McMillen Engineering Inc.

Level of Service/Average Seconds of Delay (Signalized Intersection) or Reserve Capacity (Unsignalized Intersections)

2006 Conditions

	2006 Conditions				
Intersection/Approach/Movement	Weekday	PM Peak	Saturday Peak		
SR 40 / Marker Rd. – Main Driveway	Undeveloped	Developed	Undeveloped	Developed	
SR 40 Eastbound					
Left Tums		C / 31.9		C / 32.5	
Right Turns and Throughs		B / 17.8		B / 15.7	
Approach		B / 19.3	<b></b>	B / 18.0	
SR 40 Westbound					
Left Turns	A / 8.8	C / 28.6	A / 9.0	C / 28.6	
Right Turns and Throughs		B / 13.6		B / 13.0	
Approach		B / 13.8		B / 13.3	
Marker Rd. Northbound		· <u> ·</u> ·····			
Left & Right Turns and Throughs	B / 14.3	C / 24.3	C / 16.0	C / 24.2	
Approach	B / 14.3	C / 24.3	C / 16.0	C / 24.2	
Main Driveway Southbound	·				
Left Turns and Throughs		C / 25.5		C / 25.6	
Right Turns		C / 24.9		C / 25.0	
Approach		C / 25.2		C / 25.3	
Entire Intersection LOS		B / 17.8		B / 17:0	

# TABLE 5 INTERSECTION LEVEL OF SERVICE SUMMARY 2006 CONDITIONS SR 0040

Wharton Township, Fayette County, Pennsylvania Prepared by: McMillen Engineering Inc.

Level of Service/Average Seconds of Delay (Signalized Intersection)
or Reserve Capacity (Unsignalized Intersections)
2006 Conditions

Intersection/Approach/Movement	Weekday	Weekday PM Peak		Saturday Peak	
SR 40 / Smith School Rd.	Undeveloped	Developed	Undeveloped	Developed	
SR 40 Eastbound	·			<del></del>	
Left Turns and Throughs	A / 8.3	A / 8.3	A / 8.4	A / 8.6	
Smith School Rd. Southbound					
Left and Right Turns	C / 15.3	C <sub>.</sub> / 15.3	C / 17.5	C / 18.9	
Approach	C / 15.3	C / 15.3	C / 17.5	C / 18.9	

#### TABLE 5 INTERSECTION LEVEL OF SERVICE SUMMARY 2006 CONDITIONS

SR 0040

	Level of Service/Average Seconds of Delay (Signalized Intersection) or Reserve Capacity (Unsignalized Intersections) 2006 Conditions				
Intersection/Approach/Movement	Weekday PM Peak		Saturday Peak		
SR 40 / Dinner Bell Rd.	Undeveloped	Developed	Undeveloped	Developed	
SR 40 Eastbound					
Left & Right Turns and Throughs	A / 8.3	A / 8.3	A / 8.2	A / 8.2	
SR 40 Westbound					
Left & Right Turns and Throughs	A / 8.3	A / 8.8	A / 8.8	A / 8.8	
Marker Rd. Northbound					
Left & Right Turns and Throughs	D / 27.8	D / 27.6	D/33.8	D/30.8	
Approach	D / 27.8	D / 27.6	D / 33.8	D/30.8	
Main Driveway Southbound					
Left & Right Turns and Throughs	D/31.9	D / 31.9	C / 24.9	C / 23.4	
Approach	D/31.9	D/31.9	C / 24.9	C / 23.4	

#### TABLE 5 INTERSECTION LEVEL OF SERVICE SUMMARY 2016 CONDITIONS

SR 0040

Wharton Township, Fayette County, Pennsylvania Prepared by: McMillen Engineering Inc.

•	Level of Service/Average Seconds of Delay (Signalized Intersection) or Reserve Capacity (Unsignalized Intersections)  2016 Conditions				
Intersection/Approach/Movement	Weekday	PM Peak	Saturday Peak		
SR 40 / SR 381S	Undeveloped	Developed	Undeveloped	Developed	
SR 40 Westbound				<del></del>	
Left Turns and Throughs	A / 9.4	A / 9.4	B / 10.0	A / 9.9	
SR 381S Northbound		· · · · · · · · · · · · · · · · · · ·			
Left and Right Turns	F / 59.3	F / 59.2	E / 38.0	D / 33.5	
Approach ·	F / 59.3	F / 59.2	E / 38.0	D / 33.5	

## TABLE 5 INTERSECTION LEVEL OF SERVICE SUMMARY 2016 CONDITIONS

SR 0040

	Level of Service/Average Seconds of Delay (Signalized Intersection) or Reserve Capacity (Unsignalized Intersections) 2016 Conditions				
Intersection/Approach/Movement	Weekday	Weekday PM Peak		y Peak	
SR 40 / SR 381N	Undeveloped	Developed	Undeveloped	Developed	
SR 40 Eastbound					
Left Turns and Throughs	A / 9.2	A / 9.2	A / 9.1	A / 9.0	
SR 381N Southbound					
Left and Right Turns	E / 41.6	E / 42.0	F / 53.3	E / 42.9	
Approach	E / 41.6	E / 42.0	F / 53.3	E / 42.9	

## TABLE 5 INTERSECTION LEVEL OF SERVICE SUMMARY 2016 CONDITIONS

SR 0040

Wharton Township, Fayette County, Pennsylvania Prepared by: McMillen Engineering Inc.

Level of Service/Average Seconds of Delay (Signalized Intersection)
or Reserve Capacity (Unsignalized Intersections)
2016 Conditions

Intersection/Approach/Movement	Weekday PM Peak		Saturda	Saturday Peak	
SR 40 / Hawes Rd.	Undeveloped	Developed	Undeveloped	Developed	
SR 40 Eastbound	·				
Left Turns and Throughs	A / 8.6	A / 8.6	A / 8.7	A / 8.6	
•				<u>-</u>	
Hawes Rd. Southbound					
Left and Right Turns	D / 25.9	D/26.0	C / 24.7	C / 23.0	
Approach	D / 25.9	D/26.0	C / 24.7	C / 23.0	

# TABLE 5 INTERSECTION LEVEL OF SERVICE SUMMARY 2016 CONDITIONS SR 0040

Wharton Township, Fayette County, Pennsylvania Prepared by: McMillen Engineering Inc.

Level of Service/Average Seconds of Delay (Signalized Intersection) or Reserve Capacity (Unsignalized Intersections)

2016 Conditions

Intersection/Approach/Movement	Weekday	PM Peak	Saturda	y Peak	
SR 40 / Secondary Drive	Undeveloped	Developed	Undeveloped	Developed	
SR 40 Eastbound					
Left Turns and Throughs		A / 8.5		A / 8.7	
Secondary Dr Southbound					
Left and Right Turns		C / 16.6		C / 18.8	
Approach		C / 16.6		C / 18.8	

# TABLE 5 INTERSECTION LEVEL OF SERVICE SUMMARY 2016 CONDITIONS SR 0040

Wharton Township, Fayette County, Pennsylvania Prepared by: McMillen Engineering Inc.

Level of Service/Average Seconds of Delay (Signalized Intersection) or Reserve Capacity (Unsignalized Intersections)

2016 Conditions

·	,	2016 C	onditions	
Intersection/Approach/Movement	Weekday	Weekday PM Peak		y Peak
SR 40 / Marker Rd. – Main Driveway	Undeveloped	Developed	Undeveloped	Developed
SR 40 Eastbound				
Left Turns	·	C / 31.9		C / 32.5
Right Turns and Throughs		C /.21.3		B / 17.9
Approach	·	C / 22.4		B / 19.7
SR 40 Westbound				
Left Turns	A / 9.0	C / 28.6	A / 9.3	C / 28.6
Right Turns and Throughs		B / 14.5		B / 13.7
Approach		B / 14.7		B / 13.9
Marker Rd. Northbound	·			
Left & Right Turns and Throughs	C / 15,2	C / 24.3	C / 17.1	C / 24.2
Approach	C / 15.2	C / 24.3	C / 17.1	C / 24.2
Main Driveway Southbound				
Left Turns and Throughs		C / 25.5		C / 25.6
Right Turns		C / 24.9		C / 25.0
Approach		C / 25.2		C / 25.3
Entire Intersection LOS	****	B / 19.7		B <sub>1</sub> / 18.1

#### TABLE 5 INTERSECTION LEVEL OF SERVICE SUMMARY 2016 CONDITIONS

SR 0040

Wharton Township, Fayette County, Pennsylvania Prepared by: McMillen Engineering Inc.

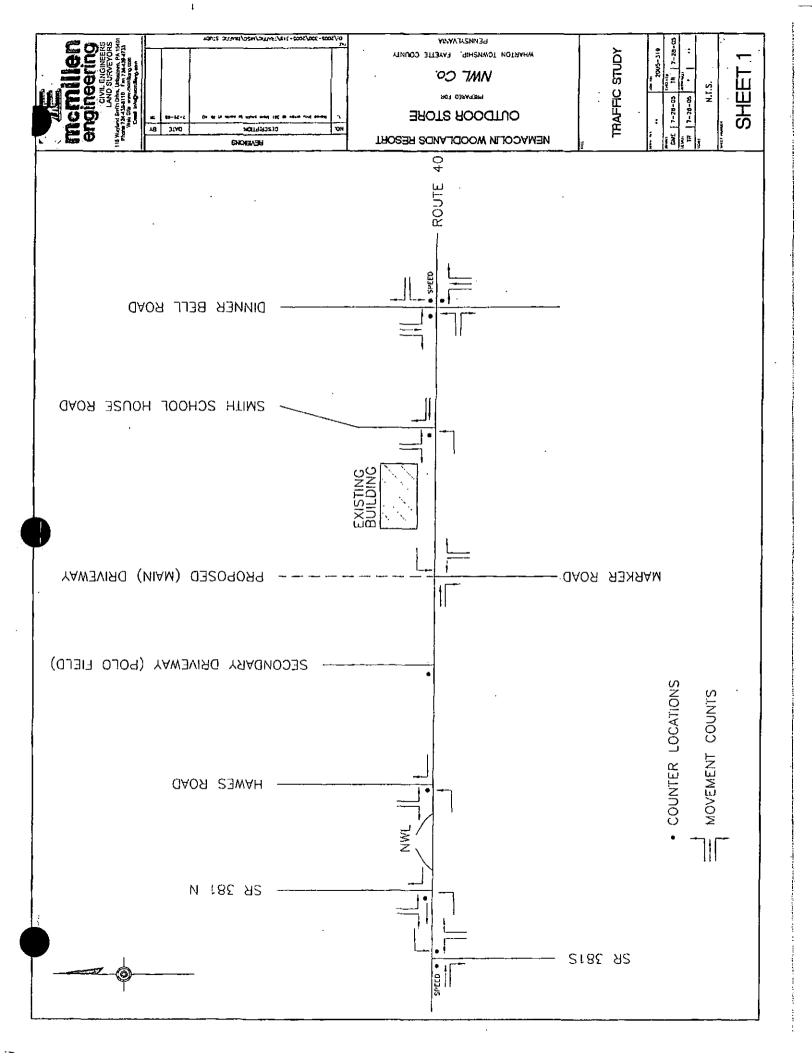
	Level of Service/Average Seconds of Delay (Signalized Intersection) or Reserve Capacity (Unsignalized Intersections)  2016 Conditions				
Intersection/Approach/Movement	Weekday	PM Peak	Saturday Peak		
SR 40 / Smith School Rd.	Undeveloped	Developed	Undeveloped	Developed	
SR 40 Eastbound					
Left Turns and Throughs	A / 8.4	A / 8.4	A / 8.6	. A / 8.5	
Smith School Rd. Southbound		<u> </u>	j.		
Left and Right Turns	C / 16.7	C / 16.7	C / 20.0	C / 19.2	
Approach	C / 16.7	C / 16.7	C / 20.0	C / 19.2	

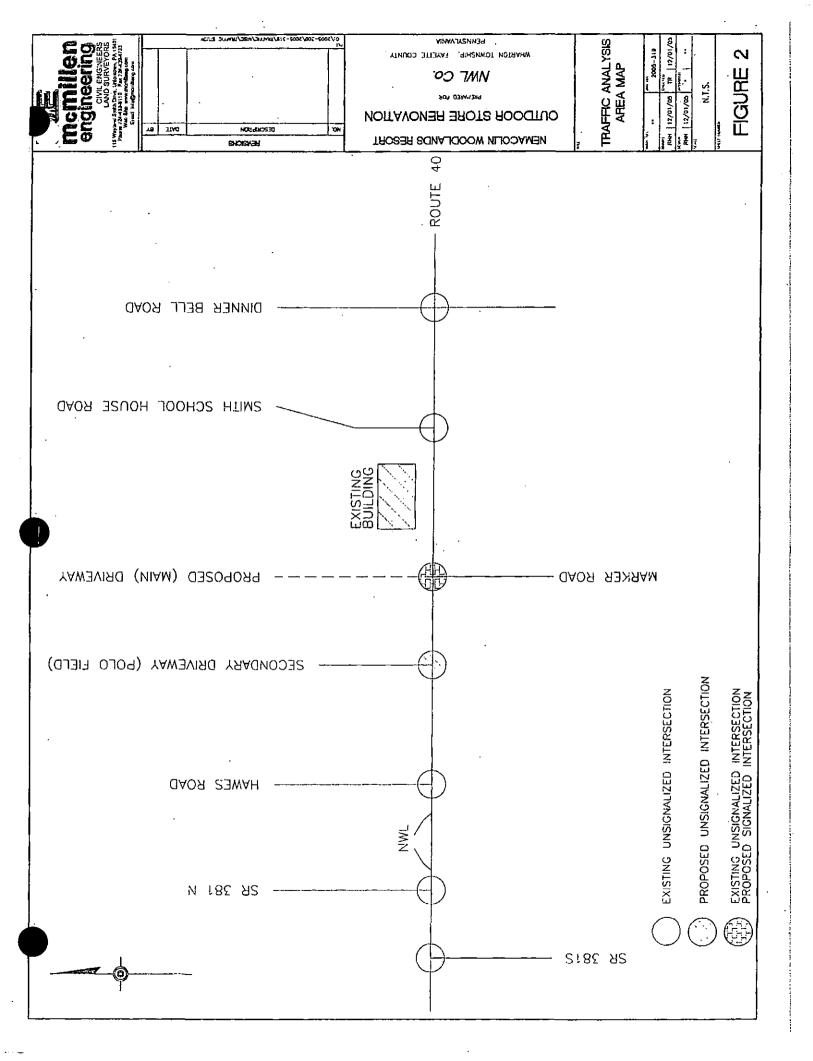
## TABLE 5 INTERSECTION LEVEL OF SERVICE SUMMARY 2016 CONDITIONS

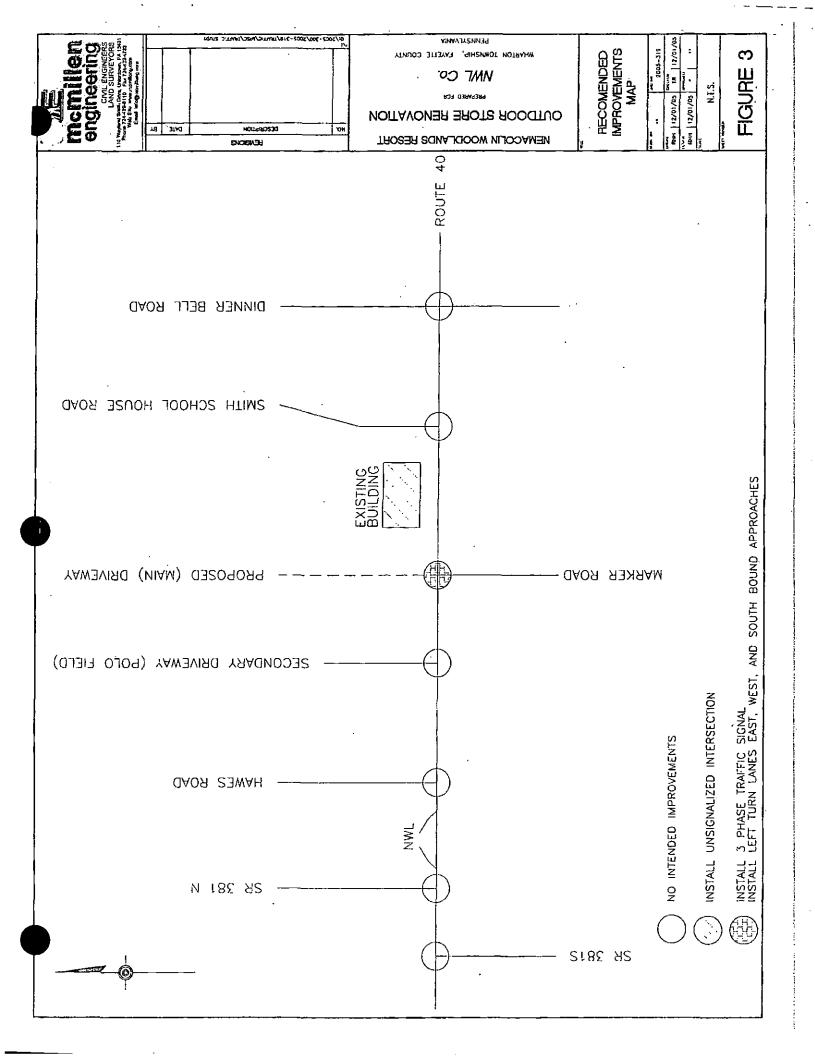
SR 0040

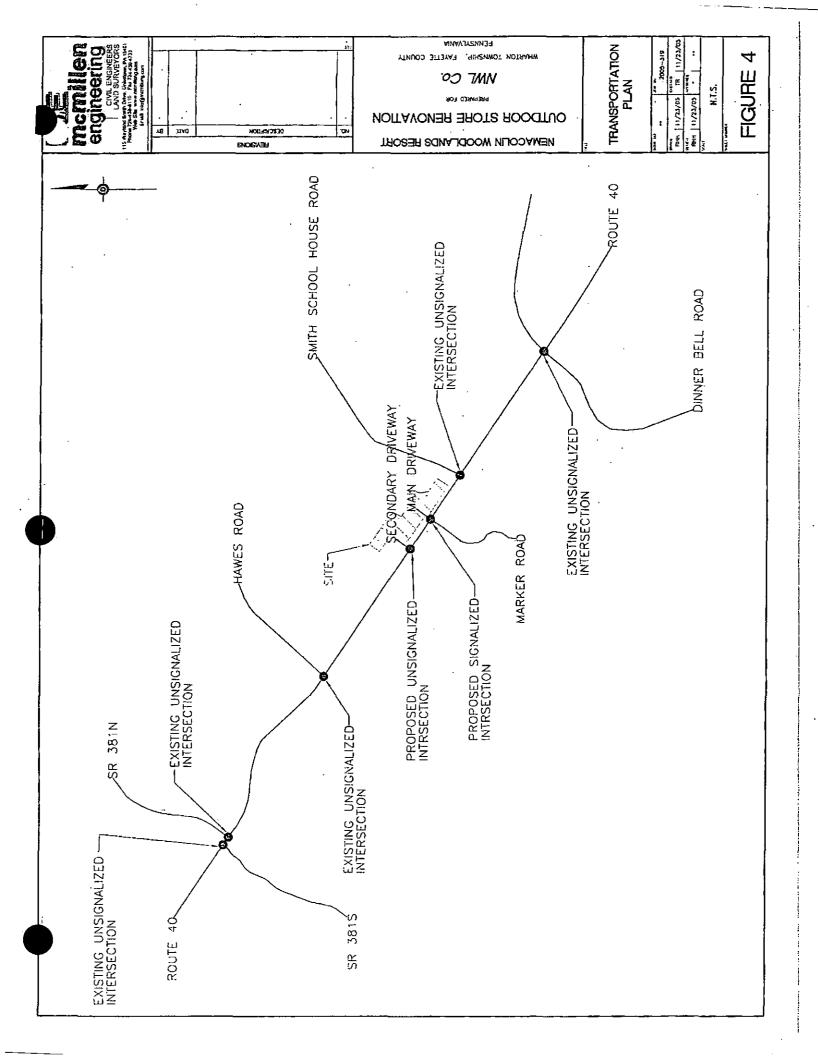
	Level of Service/Average Seconds of Delay (Signalized Intersection) or Reserve Capacity (Unsignalized Intersections)  2016 Conditions			
Intersection/Approach/Movement	Weekday PM Peak		Saturday Peak	
SR 40 / Dinner Bell Rd.	Undeveloped	Developed	Undeveloped	Developed
SR 40 Eastbound				
Left & Right Turns and Throughs	A / 8.4	A / 8.4	A / 8.4	A / 8.3
SR 40 Westbound				
Left & Right Turns and Throughs	A / 9.0	A / 9.0	A / 9.0	A / 9.0
Marker Rd. Northbound				
Left & Right Turns and Throughs	E/35.3	E / 35.0	E / 48.4	E / 42.9
Approach	E / 35.3	E / 35.0	E / 48.4	E / 42.9
Main Driveway Southbound				
Left & Right Turns and Throughs	E / 44.4	E / 44.0	D/31.8	D / 29.3
Approach	E/44.4	E / 44.0	D/31.8	D / 29.3

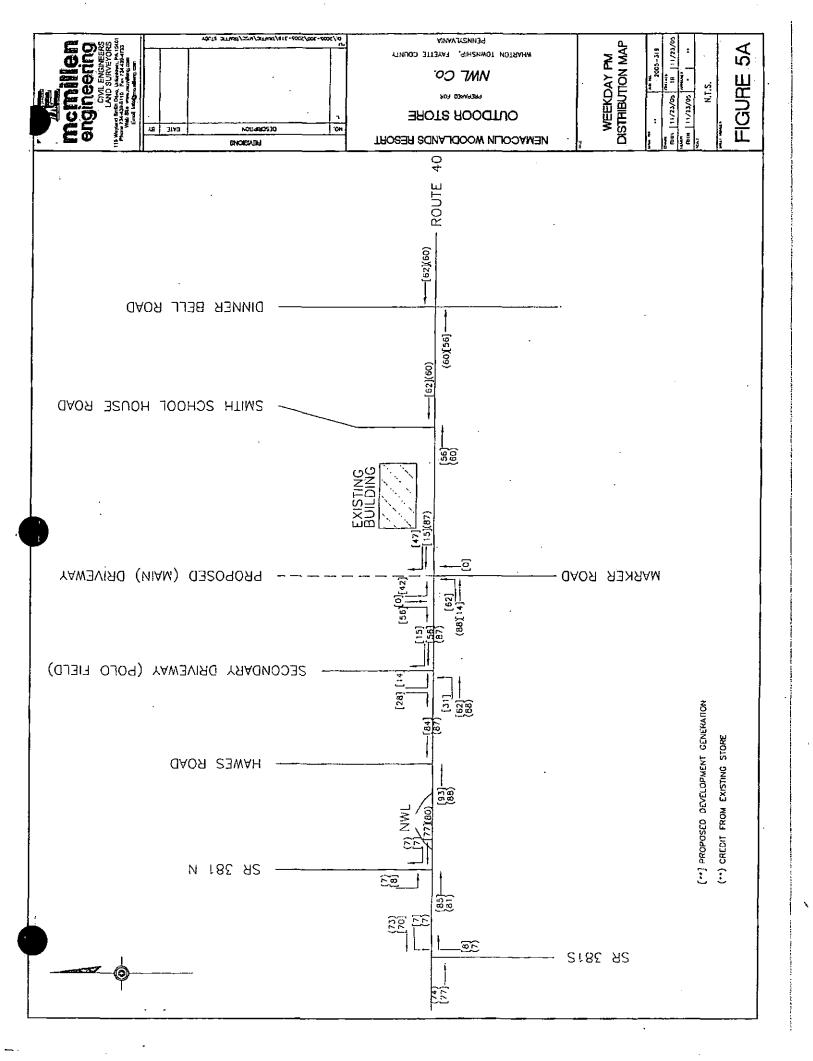
## FIGURES

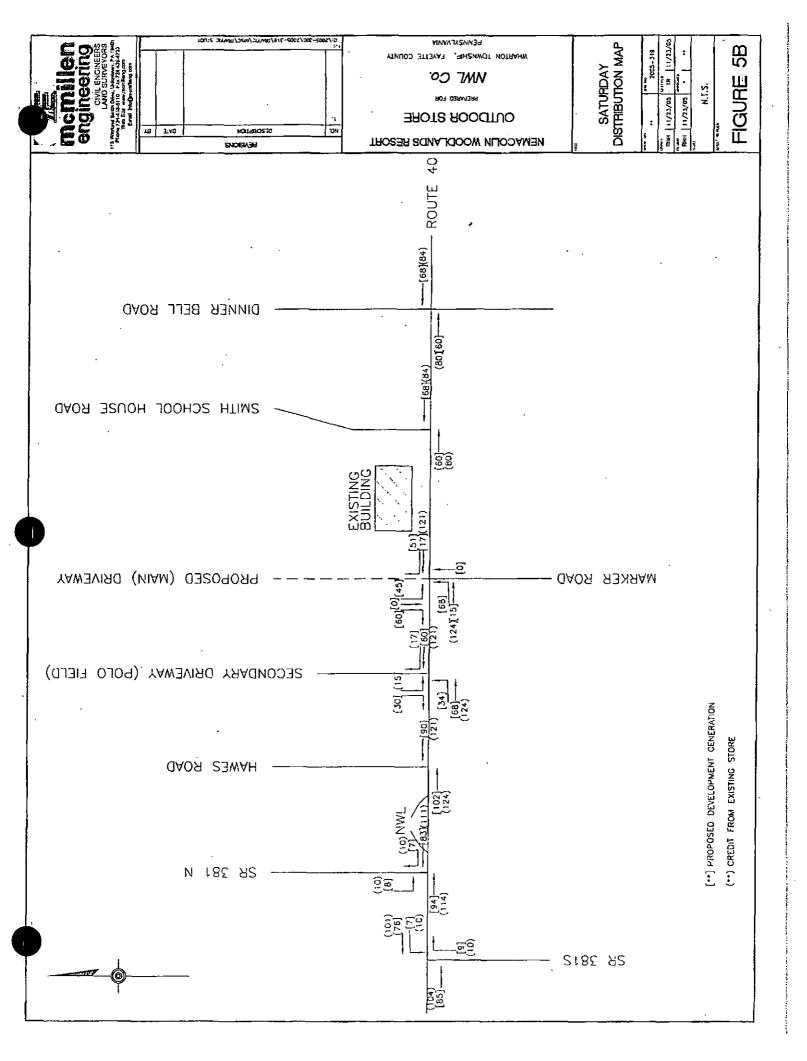


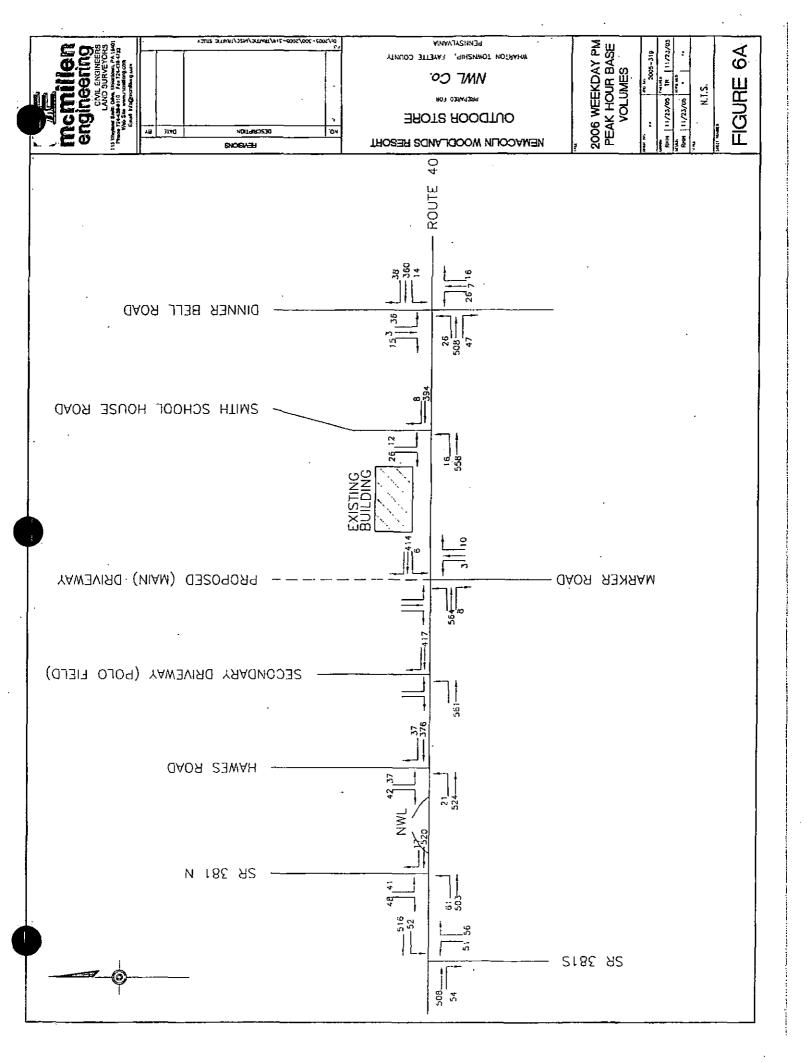


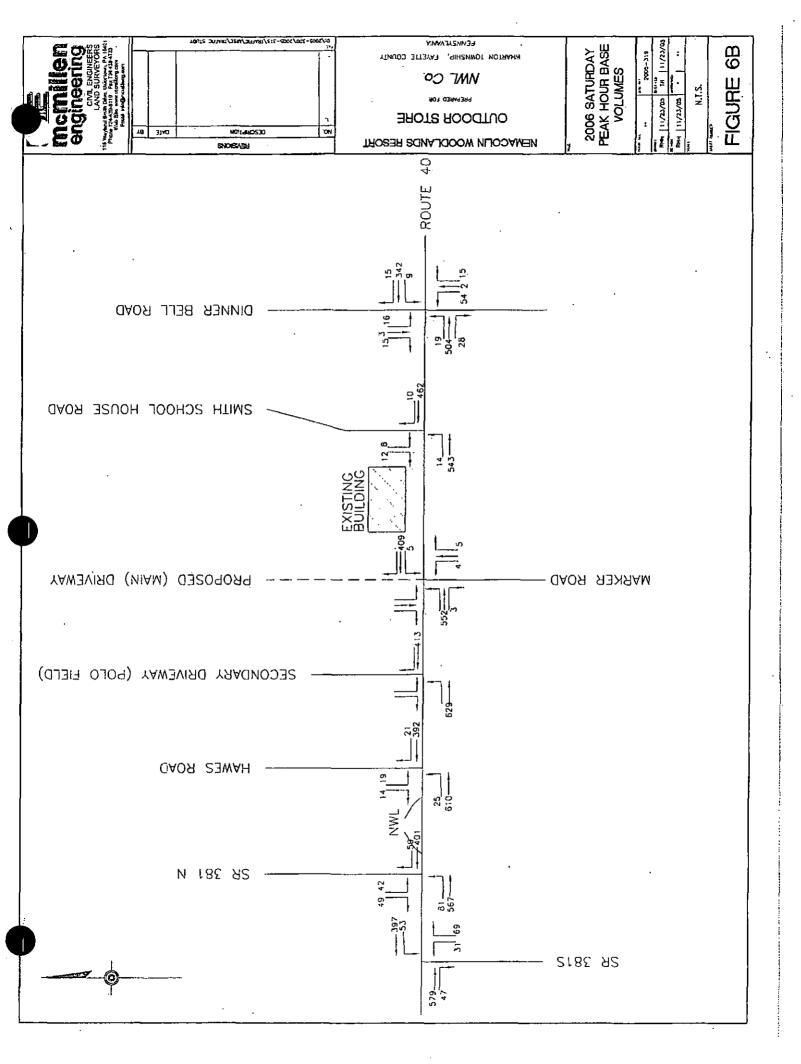


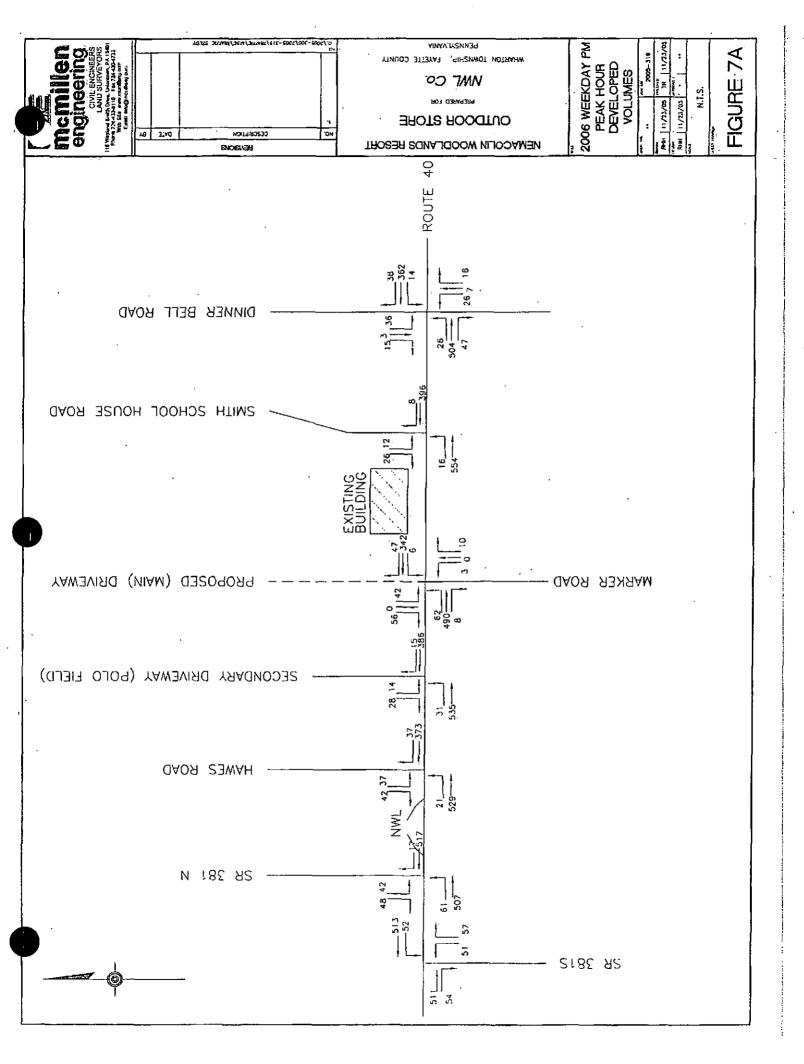


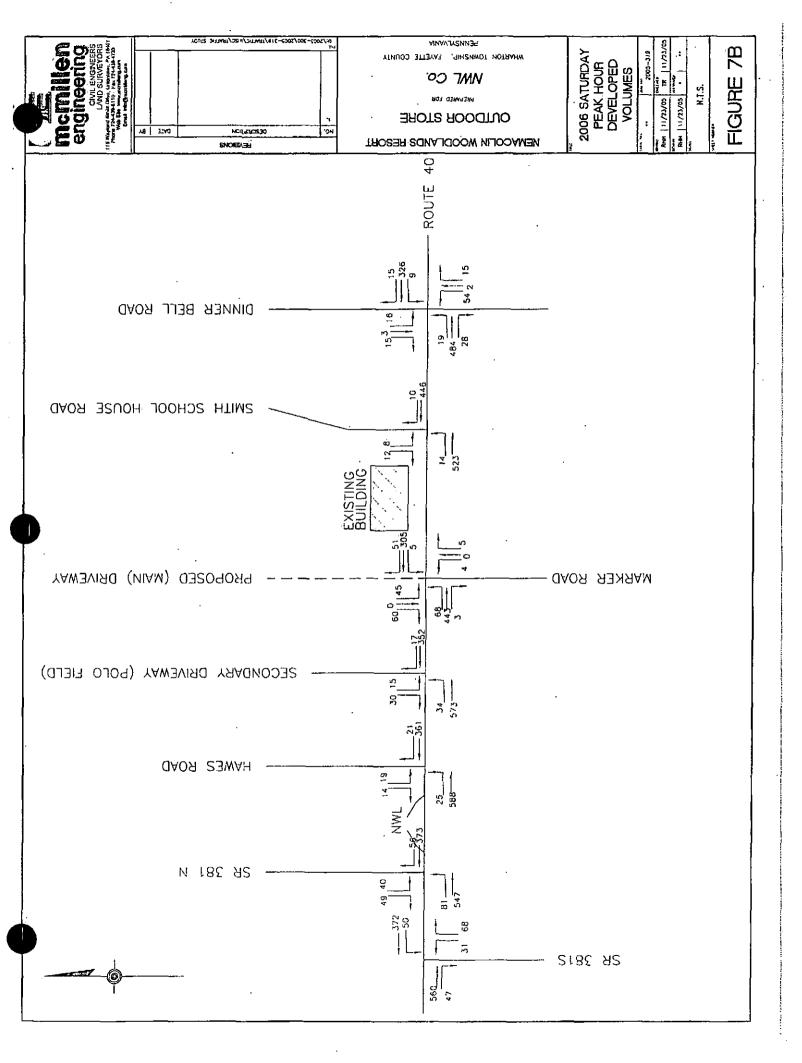


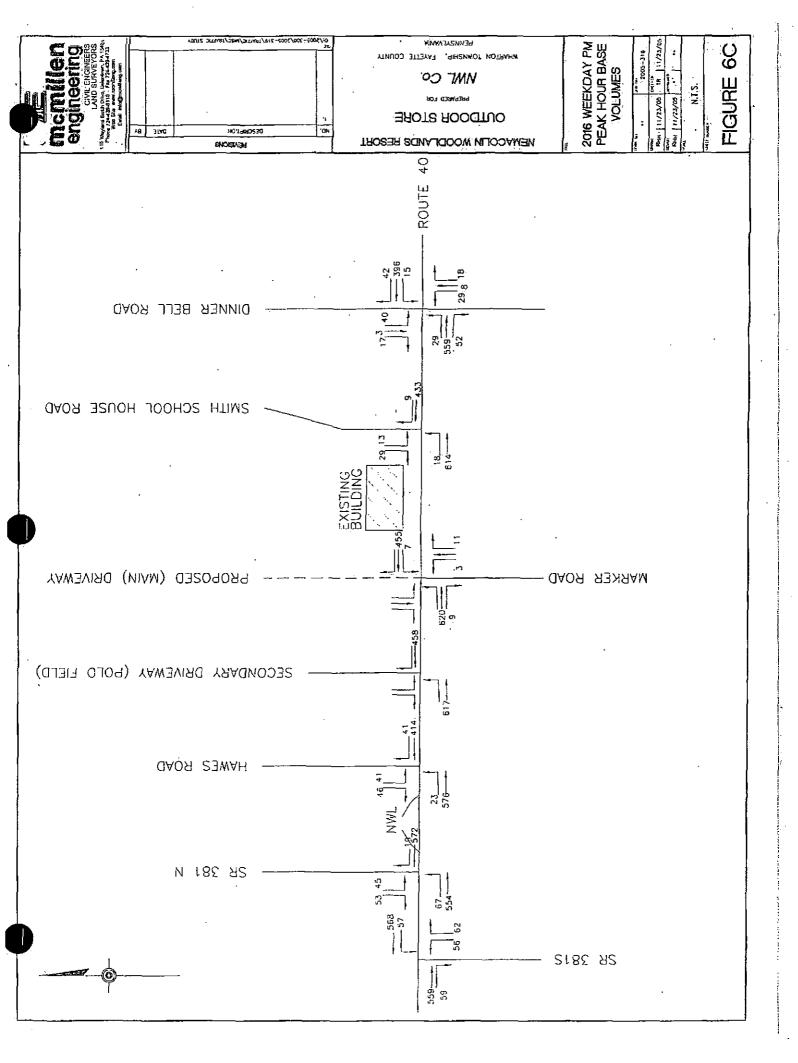


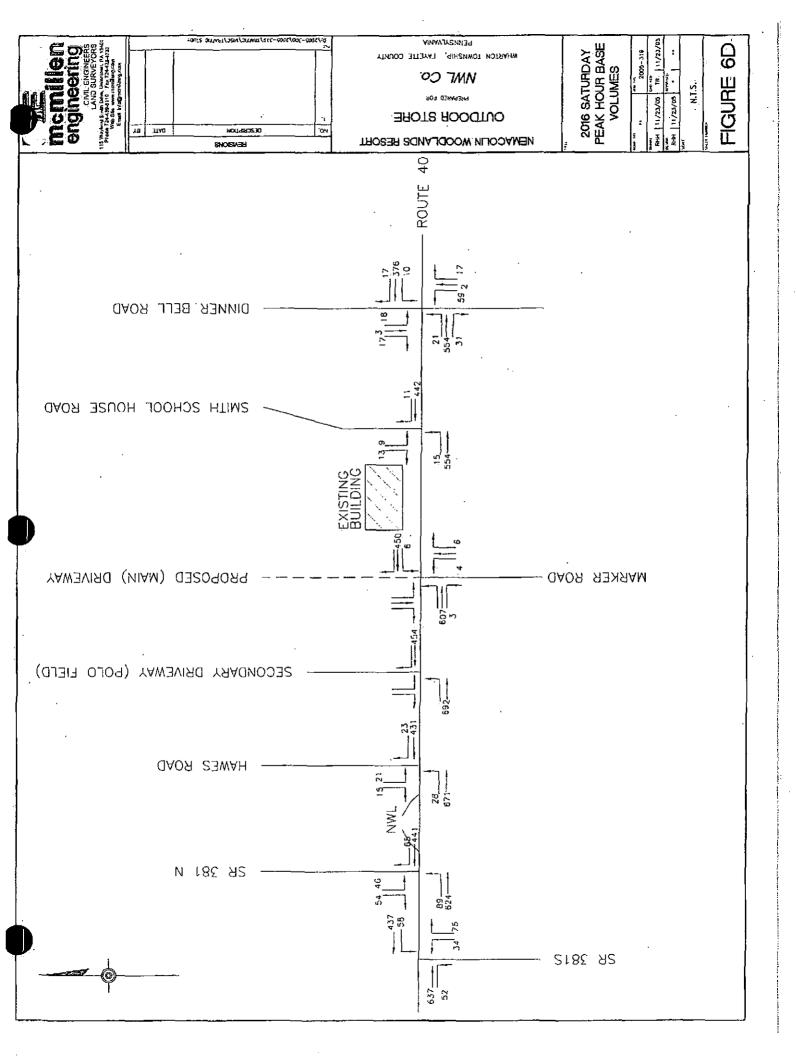


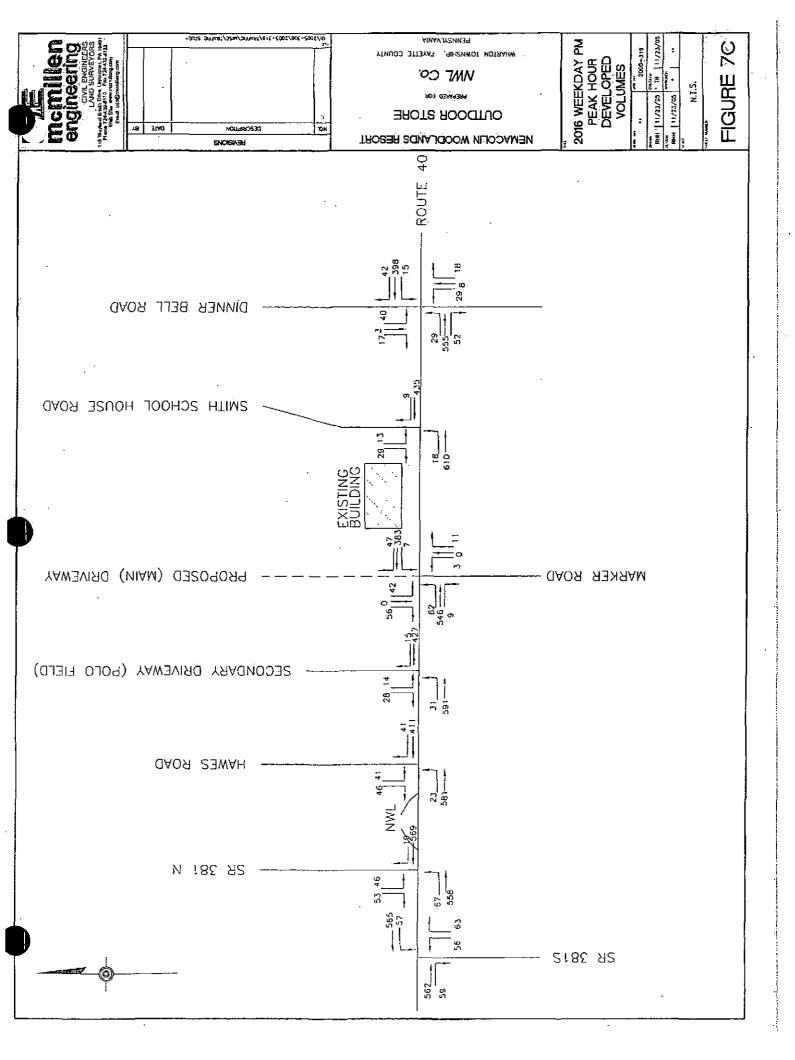


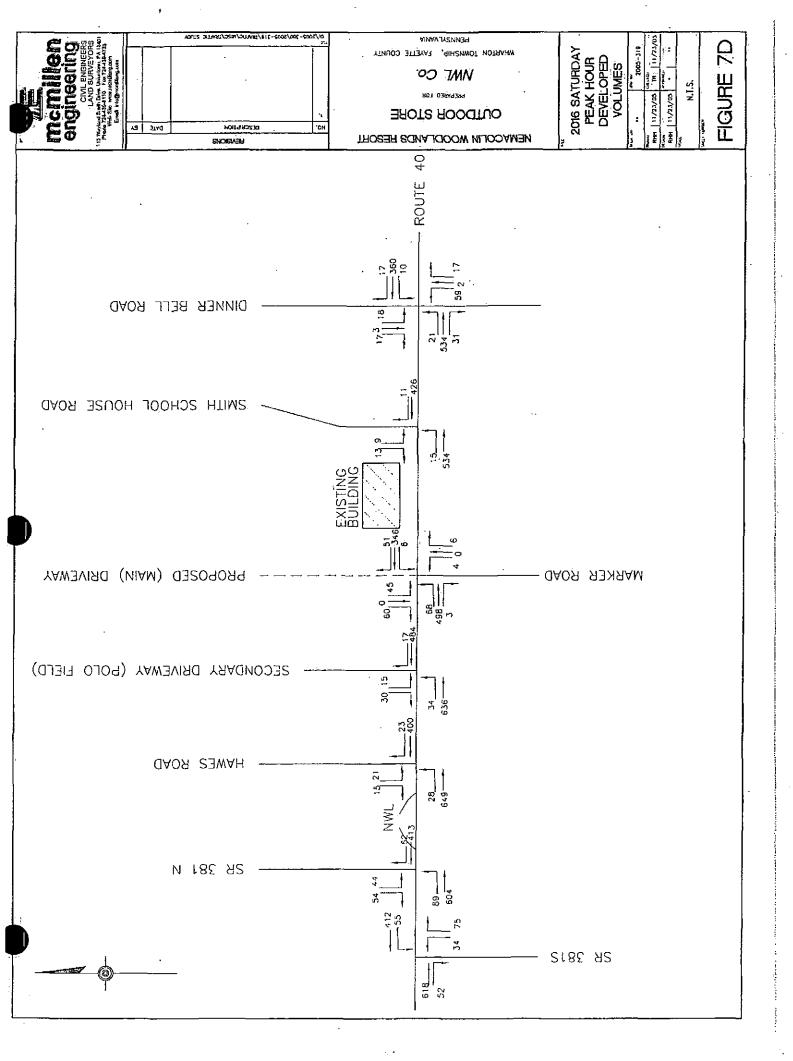


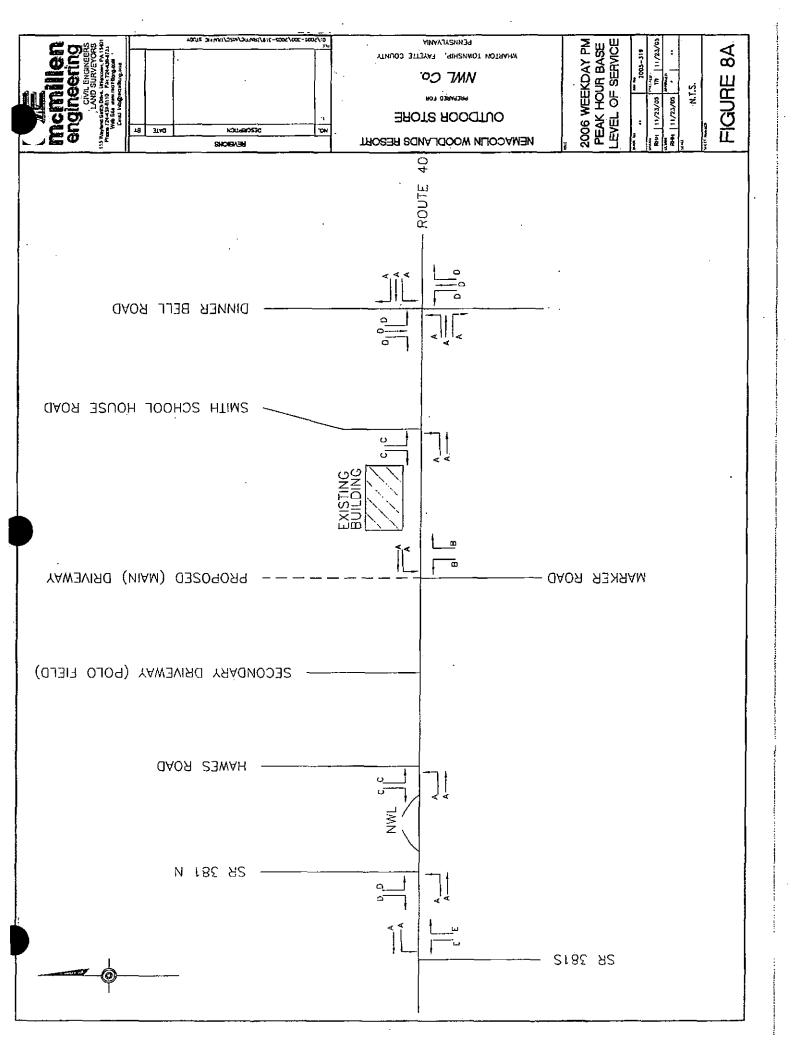


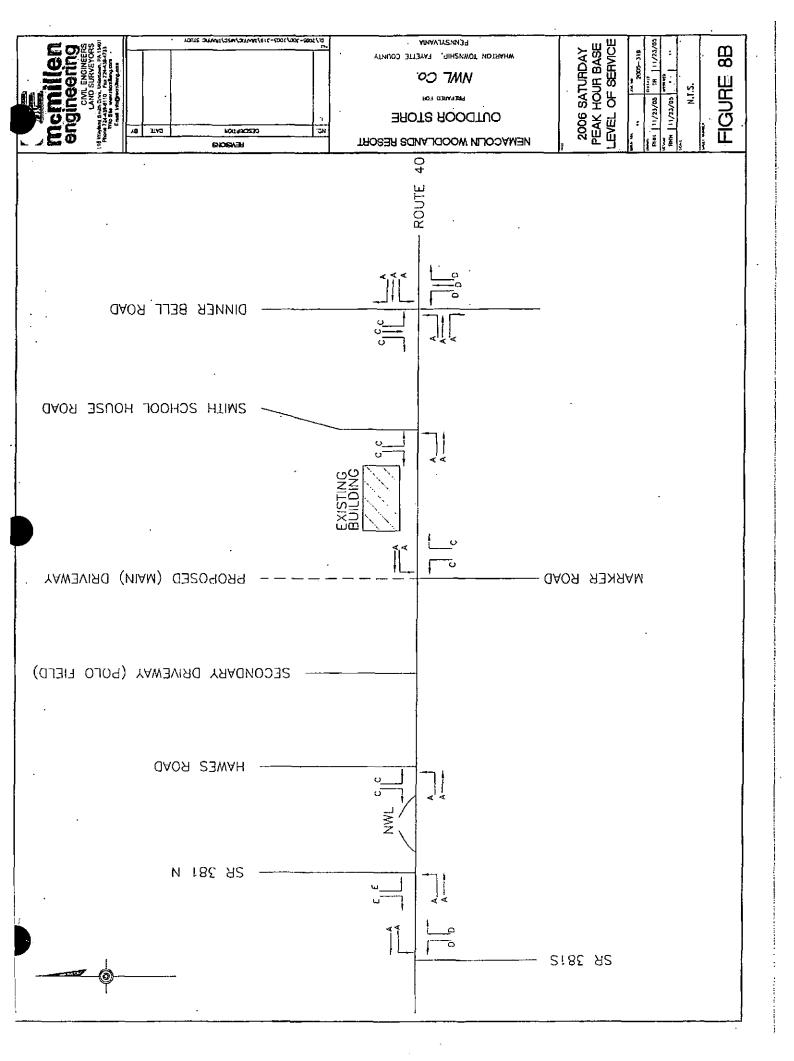


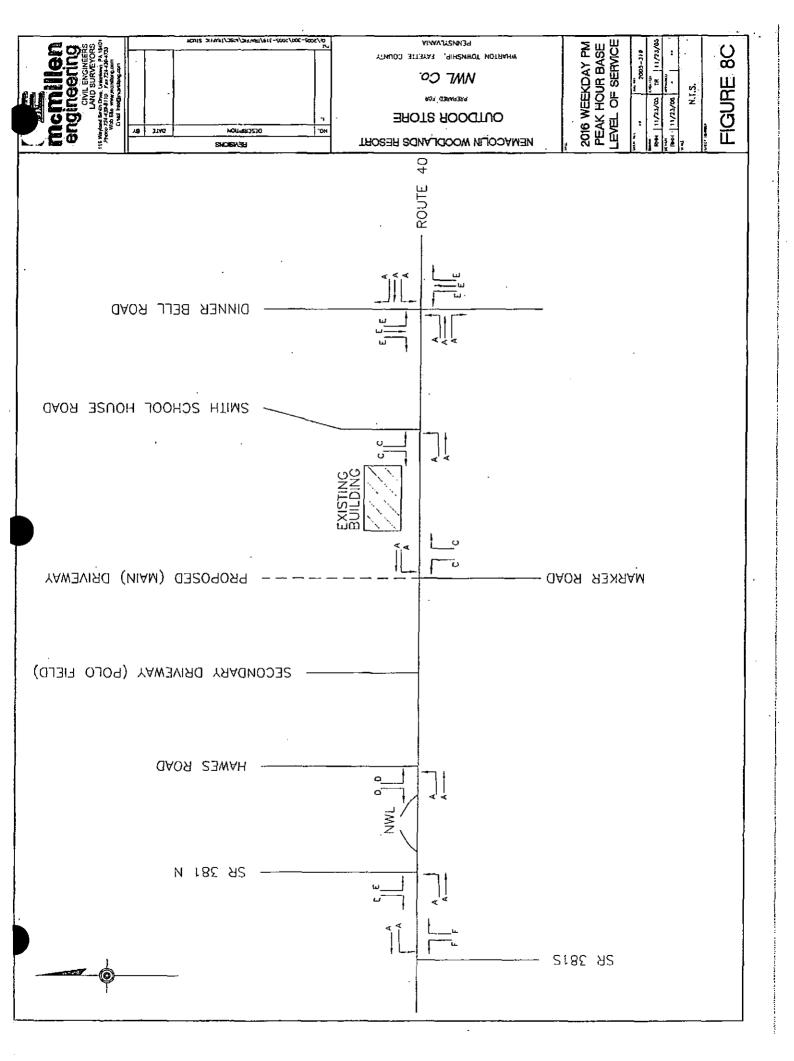


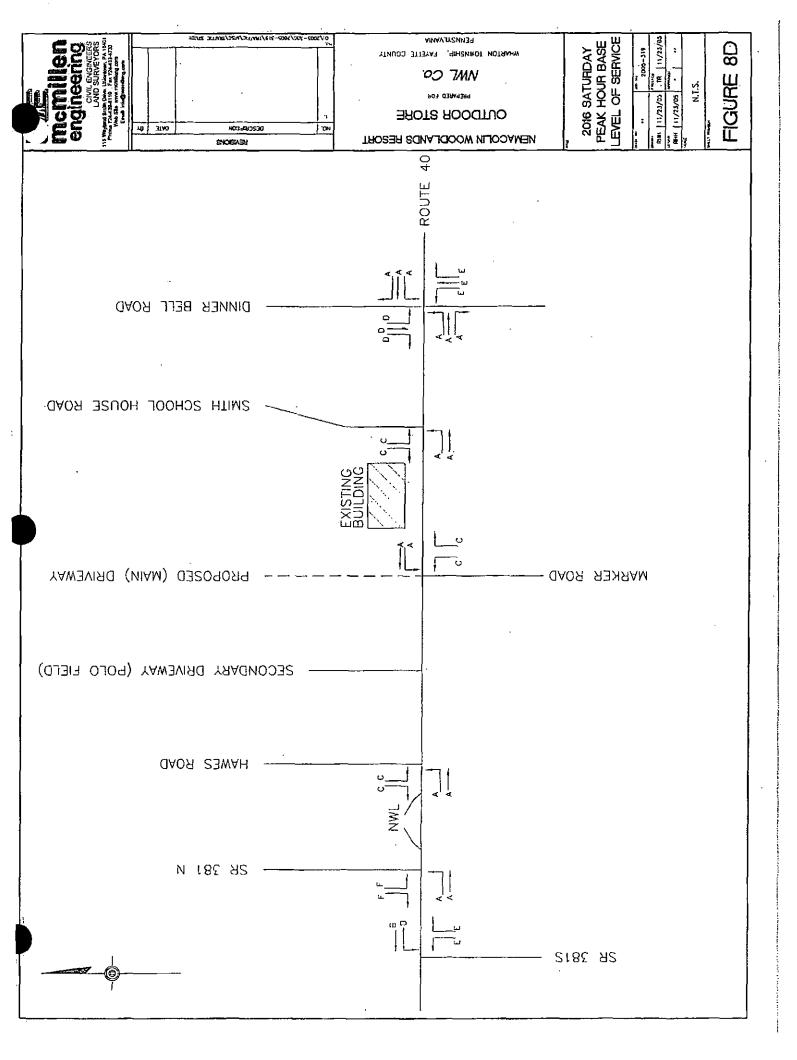


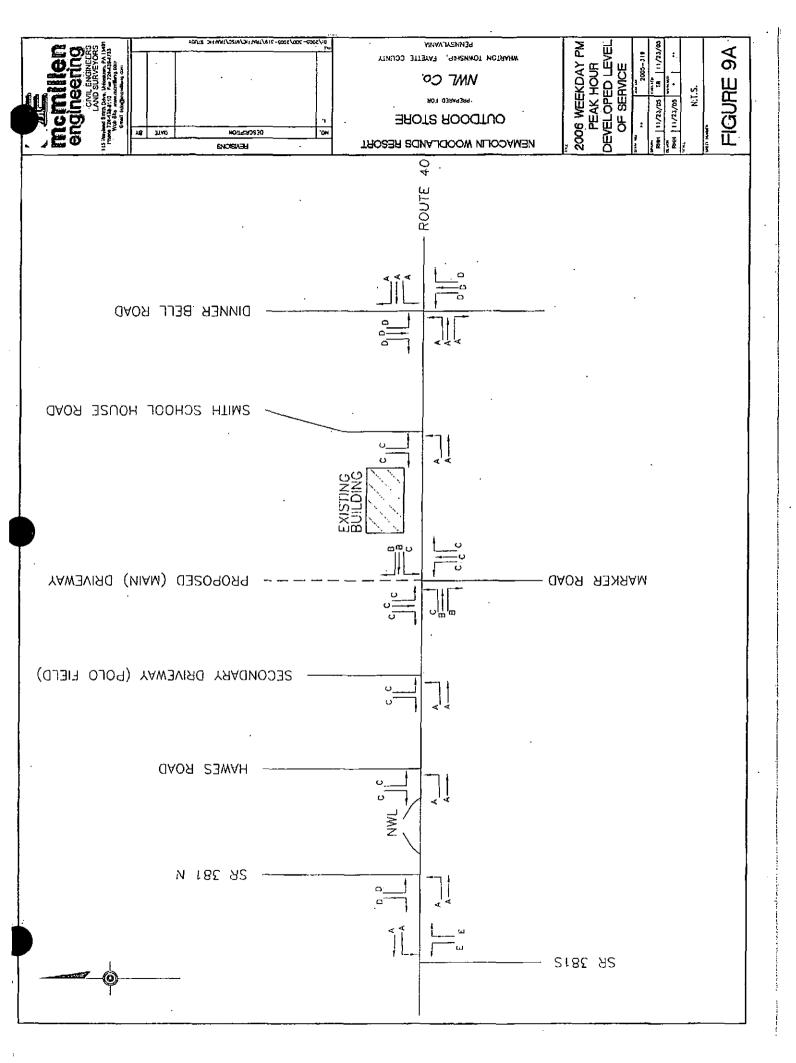


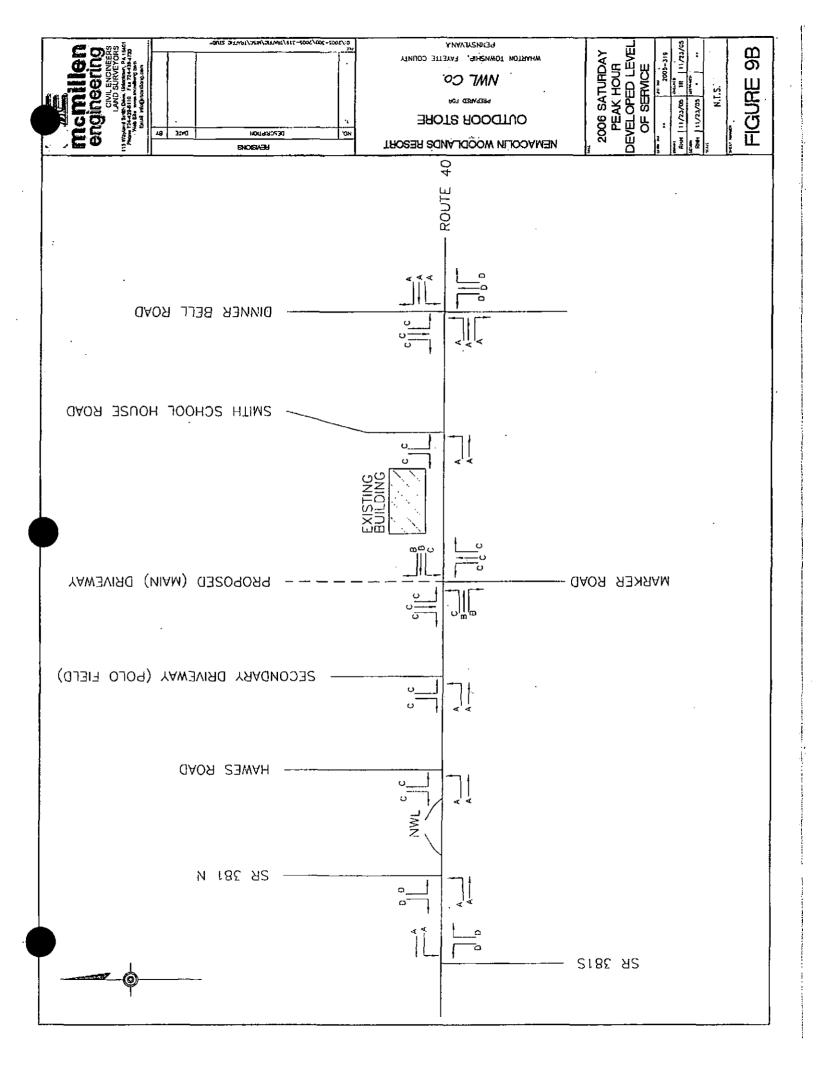


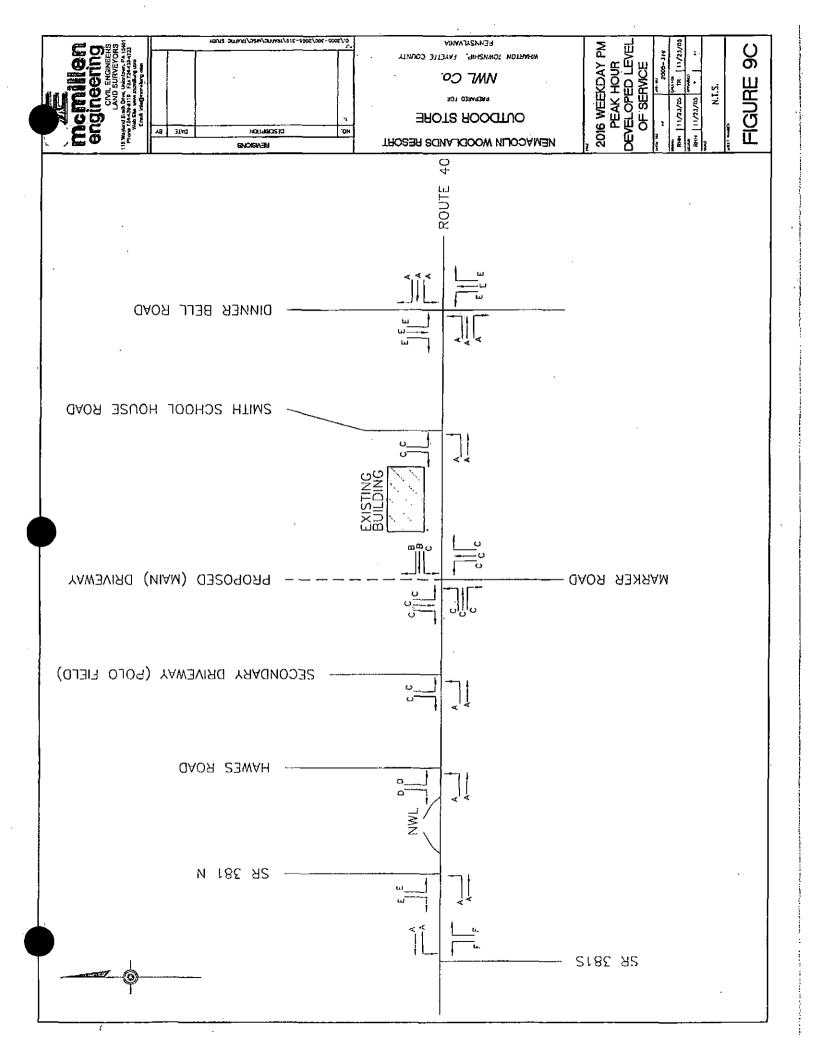


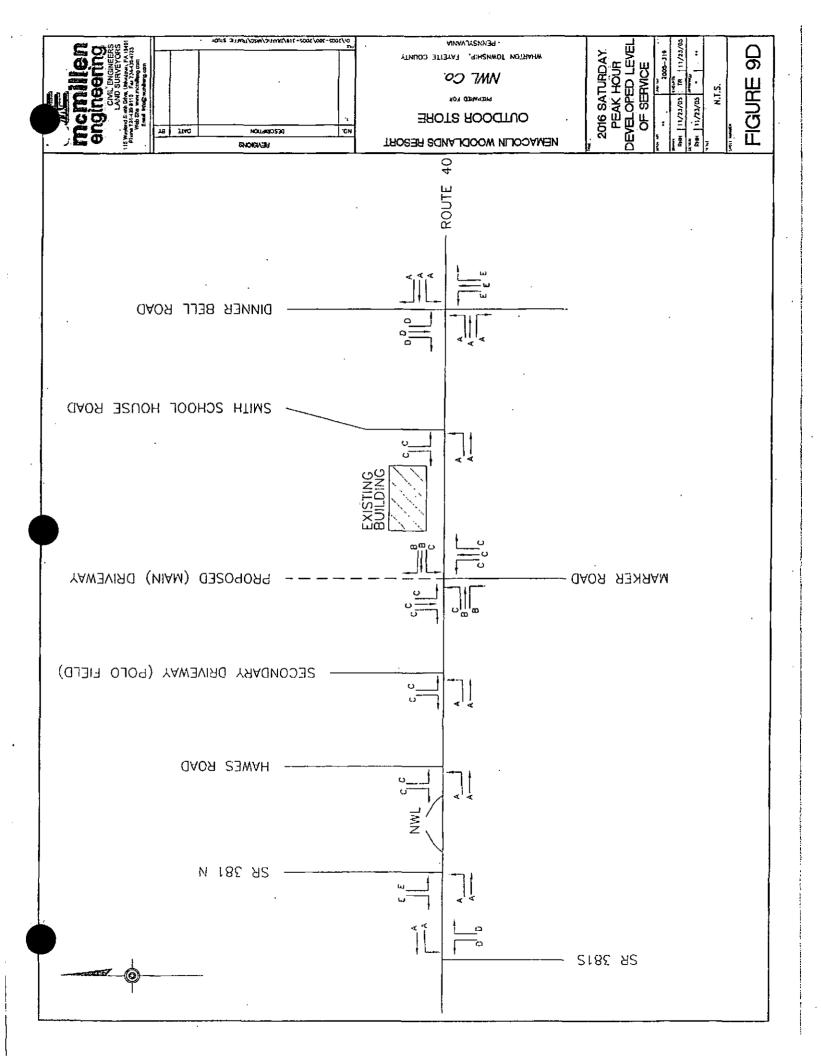












# APPENDIX 1

# CAPACITY ANALYSIS (2006 BASE CONDITIONS)

# TWO-WAY STOP CONTROL SUMMARY

Analyst: TR

igency/Co.: McMillen Engineering

Date Performed: 10/2/2005

Analysis Time Period: Weekday PM Base Intersection: Route 40/ SR 381 S

Jurisdiction:

Units: U. S. Customary

Analysis Year: 2006

Project ID: Route 40 and SR 381 S
East/West Street: Route 40
North/South Street: SR 381 S
Intersection Orientation: EW

	Vehi	icle Vo	lumes and	d Adjus	stme	nts			
Major Street:	Approach	E	astbound			Wes	stbound		
	Movement	1	2	3 .	- 1	4	5	6	
		L	T .	R	!	ŗ	T	R	
Volume	······································		508	54		52	516		
Peak-Hour Fact	or, PHF		0.92	0.75		0.72	0.91		
Hourly Flow Ra	te, HFR		552	72		72	567		
Percent Heavy	Vehicles					3			
Median Type/St	orage '	Undi	vided			/			
RT Channelized	?								-
Lanes			1. (	)		0	1		
Configuration			TF	}		LT	r		
Upstream Signa	1?		No				No		

Minor Street: Approach	No:	rthboun	d		S	outhbou	nd	
Movement	7	8	9	1	10	11	12	
	L	T	R	1	L	T	R	
Volume	51	0	56					
Peak Hour Factor, PHF	0.71	0.50	1.00					
Hourly Flow Rate, HFR	71	0 ·	56					
Percent Heavy Vehicles	3	3	3					
Percent Grade (%)		7				3		
Flared Approach: Exists?	/Storage		No	1				/
Lanes	ō	1	0					
Configuration		LTR	•					

Approach	EB	WB			Northboun	d		S	outhbour	nd
Movement	1	4	1	7	. 8	9	- 1	10	11	12
Lane Config		LT	1		LTR		1			
v (vph)		72			127	<u> </u>	<del></del>			
C(m) (vph)		952			232					
V/C		0.08	}		0.55					
95% gueue length		0.24			2.96					
Control Delay		9. <u>1</u>			37.8					
OS -	-	Α			E					
.pproach Delay					37.8					
Approach LOS					E					

Phone: Fax: E-Mail: TWO-WAY STOP CONTROL (TWSC) ANALYSIS TRAnalyst: Agency/Co.: McMillen Engineering Date Performed: 10/2/2005 Analysis Time Period: Weekday PM Base Route 40/ SR 381 S Intersection: Jurisdiction: Units: U. S. Customary Analysis Year: 2006 Project ID: Route 40 and SR 381 S East/West Street: Route 40 North/South Street: SR 381 S Intersection Orientation: EW Study period (hrs): 0.25 Vehicle Volumes and Adjustments Major Street Movements 1 2 3 4 L T R L  $\mathbf{T}$ R olume 508 54 52 516 Peak-Hour Factor, PHF 0.92 0.75 0.72 0.91 138 142 Peak-15 Minute Volume 18 18 72 Hourly Flow Rate, HFR 552 72 567 Percent Heavy Vehicles 3 Median Type/Storage Undivided RT Channelized? Lanes 1 0 0 1 Configuration TR LTUpstream Signal? No No Minor Street Movements 7 8 9 10 1.1 12  $\mathbf{T}$ L T R L R Volume 51 0 56 Peak Hour Factor, PHF 0.71 0.50 1.00 Peak-15 Minute Volume 18 0 14 Hourly Flow Rate, HFR 71 0 56 Percent Heavy Vehicles 3 Percent Grade (%) 3 Flared Approach: Exists?/Storage No RT Channelized? 0 Lanes 1 Configuration LTR Pedestrian Volumes and Adjustments Movements 13 14 1.5 16

0

0

0

0

Flow (ped/hr)

# TWO-WAY STOP CONTROL SUMMARY

Analyst: TF

Agency/Co.: McMillen Engineering

Date Performed: 10/2/2005

Analysis Time Period: Saturday PeakBase Intersection: Route 40/ SR 381 S

Jurisdiction:

Units: U. S. Customary

Analysis Year: 2006

Project ID: Route 40 and SR 381 S
East/West Street: Route 40
North/South Street: SR 381 S
Intersection Orientation: EW

Major Street:	Approach	icle Volu Eas	stbound		, <b>0.</b> 110		stbound		
	Movement	1	2	3	1	4	5	· 6	
		L	T	R	Ì	L	T	R	
Volume		<del> '</del>	579	47		53	397		
Peak-Hour Fact	or, PHF		0.84	0.65		0.74	0.84		
Hourly Flow Ra			689	72		71	472		
Percent Heavy	Vehicles		~~			3	·		
Median Type/St RT Channelized		· Undivi	ded			/	•		
Lanes			i c	)		0	1		
Configuration		•	TF	<b>\</b>		L	ַ ב		
Upstréam Signa	1?		No				Ио		
Minor Street: A	Approach	Nor	thbound	<u> </u>	_	Sou	thbound	<u></u>	···
	Movement	7	8	9	1	10	11	12	
		L	${f T}$	R	1.	${f L}$	T	R	
Volume	<del></del>	31	Ö	69		*******			<del></del>
Peak Hour Fact	or, PHF	0.86	0.50	0.78					
Hourly Flow Ra	te, HFR	36	0	88					
Percent Heavy	Vehicles	3	3	3					
Percent Grade	(%)		7				3		
Flared Approac	h: Exists?/	Storage		No	1				/
Lanes		Ō	1 0						
Configuration			LTR						

Approach	_Delay, EB	Queue 1 WB	Lengt	h, and Level o Northbound	of S	Servic	e Southbound	. <u>.</u>
Movement	. 1	4	7	8 . 9		1 10	11	12
Lane Config		LT	1	LTR		1		
v (vph)		71		124			<del></del>	
C(m) (vph)		847		280				
v/c		0.08		0.44				
95% queue length		0.27		2.15				
Control Delay		9.6		27.7				
os -		А		D				
pproach Delay				27.7				
Approach LOS				D				

Phone: Fax: E-Mail: TWO-WAY STOP CONTROL (TWSC) ANALYSIS Analyst: Agency/Co.: McMillen Engineering Date Performed: 10/2/2005 Analysis Time Period: Saturday PeakBase Intersection: Route 40/ SR 381 S Jurisdiction: Units: U. S. Customary Analysis Year: 2006 Project ID: Route 40 and SR 381 S East/West Street: Route 40 North/South Street: SR 381 S Study period (hrs): 0.25 Intersection Orientation: EW Vehicle Volumes and Adjustments 6 Major Street Movements 4 1 2 3  $\mathbf{T}$ T. Т R  $\mathbf{L}$ R 'olume 579 397 47 53 Peak-Hour Factor, PHF 0.84 0.65 0.74 0.84 Peak-15 Minute Volume 172 18 18 118 Hourly Flow Rate, HFR 689 72 71 472 Percent Heavy Vehicles 3 Median Type/Storage Undivided RT Channelized? Lanes: 1 0 Configuration LTTR Upstream Signal? No No Minor Street Movements 8 9  $\overline{10}$  $\overline{11}$ L  $\mathbf{T}$ R L Т R Volume 31 0 69 0.78 Peak Hour Factor, PHF 0.86 0.50 Peak-15 Minute Volume 9. 0 22 36. 0 Hourly Flow Rate, HFR 88 3 Percent Heavy Vehicles 3 Percent Grade (%) 3 Flared Approach: Exists?/Storage No RT Channelized? 1 Lanes Configuration LTR Pedestrian Volumes and Adjustments Movements 13 16 14 15 0 Flow (ped/hr)

#### TWO-WAY STOP CONTROL SUMMARY

Analyst: TF

Agency/Co.: McMillen Engineering

Date Performed: 10/2/2005

Analysis Time Period: Weekday PM Base Intersection: Route 40/SR 381 N

Jurisdiction:

Approach LOS

Units: U. S. Customary

Analysis Year: 2006

Project ID: Route 40 and SR 381 N East/West Street: Route 40 North/South Street: SR 381 N

Intersection Orientation: EW Study period (hrs): 0.25

Major Street:	Approach	nicle Vol Ea	astbound				estboun	d	-
<b>J</b>	Movement	1	2	. 3	1	4	5	6 .	
		L	T .	R	1	L	T	R	•
Volume	.*	61	503	<del> </del>			520	17	
Peak-Hour Facto	or, PHF	0.88	0.92				0.91	0.8	5
Hourly Flow Rat		69	546				571	19	
Percent Heavy V		3							
Median Type/Sto RT Channelized?	orage	Undi	vided			/			
Lanes		0	1				1 .	0	
Configuration		. ]						ΓR	
Upstream Signal	1?		No				No		
Minor Street:	Approach	No	orthbour	nd	<del></del>	S	outhbou		
	Movement	7	8	9	]	10.	11	12	
•		L	T	Ř	1	L	T	R	
Volume						41	0	48	
Peak Hour Facto						0.71	0.50	0.68	3
Hourly Flow Rat						57	0	70	
Percent Heavy V						3	3	3	
Percent Grade (			-5				-7		
Flared Approach	ı: Exists?	?/Storage			1			No	/
Lanes						0	1	0	
Configuration							LTR		
	Dolar.	Queue Le	nath -	and Tax	1	F CA.	ri co	-	
Approach	belay, EB	WB		thboun		r acr.		hbound	<del></del>
Approach Movement	1	4	7	. cmboun 8	9	ı	10	-1100und	12
Movement Lane Config	LT	1 z	ı	O.	פ	1	7.0	LTR	12
v (vph)	69				_			127	
C(m) (vph)	981							274	
V/C	0.07							0.46	
95% queue lengt								2.30	
Control Delay	8.9							29.0	
TOS	А							D	
.pproach Delay								29.0	

D

Fax: Phone: E-Mail: TWO-WAY STOP CONTROL (TWSC) ANALYSIS Analyst: Agency/Co.: McMillen Engineering Date Performed: 10/2/2005 Analysis Time Period: Weekday PM Base Intersection: Route 40/SR 381 N Jurisdiction: Units: U. S. Customary Analysis Year: 2006 Project ID: Route 40 and SR 381 N East/West Street: Route 40 North/South Street: SR 381 N Intersection Orientation: EW Study period (hrs): 0.25 Vehicle Volumes and Adjustments Major Street Movements 2 6 3 4 1 L Τ R L  $\mathbf{T}$ R olume 61 503 520 17 Peak-Hour Factor, PHF 0.88 0.92 0.91 0.85 Peak-15 Minute Volume 17 137 143 5 69 546 19 Hourly Flow Rate, HFR 571 Percent Heavy Vehicles 3 Median Type/Storage Undivided RT Channelized? Lanes 1 1 0. Configuration LTŤR Upstream Signal? No No Minor Street Movements 8 9  $\overline{10}$ 11  $\overline{12}$ L Т R L T R Volume 41 0 48 Peak Hour Factor, PHF 0.71 0.50 0.68 Peak-15 Minute Volume 14 18 0 Hourly Flow Rate, HFR 57 0 70 Percent Heavy Vehicles 3 3 3 Percent Grade (%) Flared Approach: Exists?/Storage No RT Channelized? 0 Lanes 1 0 Configuration LTR Pedestrian Volumes and Adjustments Movements 13 14 15 16 Flow (ped/hr)

#### TWO-WAY STOP CONTROL SUMMARY

Analyst:

TR

\qency/Co.: McMillen Engineering

Date Performed: 10/2/2005

Analysis Time Period: Saturday Peak Base

Intersection: Route 40/SR 381 N

Jurisdiction:

Units: U. S. Customary .

Analysis Year:

2006

Project ID: 'Route 40 and SR 381 N

East/West Street:

Route 40

North/South Street:

SR 381 N

Intersection Orientation: EW

Flared Approach: Exists?/Storage

Lanes

Configuration

Study period (hrs): 0.25

No

LTR

Major Street:	Approach		umes and stbound	-	19 CILIC		stbound	
	Movement -	1	2	3	- 1	4	5	6
		L	T ·	R	İ	I,	T	R
Volume		81	567	<u> </u>			401	59
Peak-Hour Fact	or, PHF	0.91	0.84				0.84	0.78
Hourly Flow Ra	ite, HFR	89	675				477	75
Percent Heavy	Vehicles	3						
Median Type/St RT Channelized		Undiv	ided			/		
Lanes		0	1				1	0
Configuration		L	${f T}$				Tl	R
Upstream Signa	1?	•	No				No	
Minor Street:	Approach	No	rthbound	i	- <u> </u>	So	ithbound	i
	Movement	7	8	9	1	10	11	12 .
		L	T	R	1	L	ፕ ·	R
Volume .		· · · · · · · · · · · · · · · · · · ·	<u> </u>			42	0	49
Peak Hour Fact	or, PHF					0.70	0.50	0.77
Hourly Flow Ra	te, HFR					60	0	63
Percent Heavy	Vehicles					3	3	3
Percent Grade	(용)		-5				-7	

7 mara a a la	_beray, _B		ье	ngt	h, and Lev		261			<u>.</u>
Approach	20	WB			Northbou				outhbour	
Movement	1	4	j	7	8	9	ŀ	10	11	12
Lane Config	$\mathbf{L}\mathbf{T}$		l				- 1		LTR	
v (vph)	89	<del></del>			· <u>-</u>				123	. <del></del>
C(m) (vph)	1013								237	
v/c	0.09								0.52	
95% queue length	0.29								2.72	
Control Delay	8.9								35.5	
os	A								E	
.pproach Delay									35.5	
Approach LOS									E	

Phone: Fax: E-Mail: TWO-WAY STOP CONTROL (TWSC) ANALYSIS Analyst: TR Agency/Co.: McMillen Engineering 10/2/2005 Date Performed: Analysis Time Period: Saturday Peak Base Intersection: Route 40/SR 381 N Jurisdiction: Units: U. S. Customary Analysis Year: 2006 Project ID: Route 40 and SR 381 N East/West Street: Route 40 North/South Street: SR 381 N Study period (hrs): 0.25 Intersection Orientation: EW Vehicle Volumes and Adjustments Major Street Movements 6 1 2 3 4 Τ.  $\mathbf{T}$ R L Т R .olume 81 567 401 59 0.91 0.84 .0.84 0.78 Peak-Hour Factor, PHF 22 119 19 Peak-15 Minute Volume 169 Hourly Flow Rate, HFR 89 675 47.7 75 3 Percent Heavy Vehicles Median Type/Storage Undivided RT Channelized? 1 0 Lanes LTTR Configuration Upstream Signal? No No 10 12 8 9 11 Minor Street Movements T R L T R 49 Volume 42 0 0.70 Peak Hour Factor, PHF 0.50 0.77 Peak-15 Minute Volume 15 0 16 Hourly Flow Rate, HFR 60 0 63 3 3 3 Percent Heavy Vehicles Percent Grade (%) Flared Approach: Exists?/Storage No RT Channelized? 0 Lanes Configuration LTR Pedestrian Volumes and Adjustments Movements 13 14 15 16 Flow (ped/hr)

# TWO-WAY STOP CONTROL SUMMARY

Analyst:

TR

igency/Co.:

McMillen Engineering

Date Performed:

10/2/2005

Intersection:

Analysis Time Period: Weekday PM Base

Route 40/ Hawes Road

Jurisdiction:

Units: U. S. Customary

2006

Analysis Year:

Project ID: Route 40 and Hawes Road

East/West Street: Route 40

North/South Street: Hawes Road

Intersection Orientation: EW

							(1100)	,	
Major Ctroots As		hicle Volu	umes and stbound		stme		stbound	<u></u>	
	proach							ر 6	
MC	vement	1	2 Т	3 R	J	4 L	5 T		
		Ĺ	1	K	ı	ь	1.	R	
Volume		21	524	-			376	37	•
Peak-Hour Factor,		0.66	0.92				0.91	0.6	6
Hourly Flow Rate,	HFR	31	569				413	56	
Percent Heavy Veh		3							
Median Type/Stora RT Channelized?	ıge	Undiv:	ided			/			
Lanes		0	1				1	0	•
Configuration ·		L.						rr	
Upstream Signal?		ш.	No				No	LIX	
pscream Signal:			NO			•	140		
Minor Street: Ap	proach		rthbound			So	uthbour		
Mo	vement	7	8	9	1	10	11	12	
		$\mathbf{L}$	T	R	J	${f L}$	T	R	
Volume						37	0	42	
Peak Hour Factor,	PHF					0.62	0.50	0.60	5
Hourly Flow Rate,	HFR					59	0	63	
Percent Heavy Veh	icles		•			3	3	3	
Percent Grade (%)			-5				-10		
Flared Approach:	Exists'	?/Storage			/			No	/
Lanes		_				0	1	0	
Configuration							LTR		
	Dolay	Queue Ler	ath ar	nd Lave	al o	f Sarv	ice		
Approach	_BETAY,	MB.		hbound		LUCIV		hbound	i
Movement	1	4	7	8	9	- 1	10	11	12
	7								
Lane Config	LT	i				1		LTR	
Lane Config	LT	i	<del></del>			1			
Lane Config v (vph)	LT 31	i						122	
Lane Config v (vph) C(m) (vph)	31 1087	i						122 347	
Lane Config v (vph) C(m) (vph) v/c	31 1087 0.03	<u> </u>						122 347 0.35	
Lane Config (vph) (m) (vph) //c 95% queue length	31 1087 0.03 0.09	<u> </u>				1		122 347 0.35 1.54	
Lane Config  (vph)  (m) (vph)  //c  95% queue length  Control Delay	31 1087 0.03 0.09 8.4	<u> </u>				-		122 347 0.35 1.54 20.9	
	31 1087 0.03 0.09	<u> </u>				1		122 347 0.35 1.54	

Phone: E-Mail: Fax:

TWO-WAY STOP CONTROL (TWSC) ANALYSIS

Analyst:

 $\mathbf{T}\mathsf{R}$ 

Agency/Co.:

McMillen Engineering

Date Performed:

10/2/2005

Analysis Time Period: Weekday PM Base

Intersection:

Route 40/ Hawes Road

Jurisdiction:

Units: U. S. Customary

Analysis Year:

2006

Project ID: Route 40 and Hawes Road

East/West Street:

Route 40

North/South Street:

Hawes Road

Intersection Orientation: EW

	Vehicle	Volumes	and	Adjustmen	ts		
Major Street Movements	1	2	3	4	5	6	
	<u>L</u> .	T	R	L	T	$R_{\perp}$	
	<u> </u>						
olume ·	21	524			376	37	
Peak-Hour Factor, PHF	0.66	0.92			0.91	0.66	
Peak-15 Minute Volume	8 ,	142			103	14	
Hourly Flow Rate, HFR	31	569			413	56	
Percent Heavy Vehicles	3						
Median Type/Storage	Undi	vided		/			
RT Channelized?							
Lanes	0	1`			1	0	
Configuration	L	$\mathbf{T}$			T	R	
Upstream Signal?		No			No		
Minor Street Movements	7	8	9	10	11	12	
	L	${f T}$	R	· 1.	Т	R	
Volume	<u>_</u>	<del></del>		37	0	42	
Peak Hour Factor, PHF				0.62	0.50	0.66	
Peak-15 Minute Volume				15	0	16	
Hourly Flow Rate, HFR				59	0	. 63	
Percent Heavy Vehicles				3	3	3	
Percent Grade (%)		-5		-	-10		
Flared Approach: Exists	:?/Storag	e		/		No	1
RT Channelized?	·			,			•
Lanes				0	1 :	0	
Configuration				v	LTR	· .	

	Pedestrian	Volumes	and Ad	justments	
Movements	13	14	1.5	16	
Flow (ped/hr)		0	0	0	

# TWO-WAY STOP CONTROL SUMMARY

Analyst:

igency/Co.:

McMillen Engineering

gency/Co.: McMillen F Date Performed: 10/2/2005

Analysis Time Period: Saturday Base

Intersection:

Route 40/ Hawes Road

Jurisdiction:

Units: U. S. Customary

2006

Analysis Year: Project ID: Route 40 and Hawes Road

East/West Street:

Route 40

North/South Street: Hawes Road

Intersection Orientation: EW

		icle Vol			ıstme				
Major Street:	Approach	Ęa.	stbound			We	stbound		
	Movement	1	2	3	1	4	5	6	
		$^{\mathrm{L}}$	T	.R	I	L	T	R	
Volume		25	610				392	21	
Peak-Hour Fact	or, PHF	0.78	0.84				0.84	0.58	
Hourly Flow Ra	ate, HFR	32	726				466	36	
Percent Heavy		3	<u></u> -						
Median Type/St		Undiv:	i.ded			/			
RT Channelized	•				-				
Lanes		0	1				1 (	}	
Configuration		L'	Г				TF	₹	
Upstréam Signa	11?		ИО				No		
Minor Street: Apr	Approach	No	rthbound	d.	· <del>· · · · · · · · · · · · · · · · · · </del>	So	uthbound	1	
	Movement	7	8	9	- 1	10	11	12	
		L	$\mathbf{T}$ .	R	Ì	L	T	R	
Volume				<del></del>	<del></del>	19	0	14	
Peak Hour Fact	or, PHF					0.79	0.50	0.58	
Hourly Flow Ra	ite, HFR					24	0	24	
Percent Heavy	Vehicles					3	3	3	
Percent Grade			-5				-10		
Flared Approac		Storage			/			No	/
Lanes						0	1 0	)	
Configuration							LTR		

Approach	_Delay, EB	Queue WB	Le	_	and Le Iorthbou		Ser		outhboun	d	<del></del>
Movement Lane Config	1 LT	4	1	7	8	9	1	10	11 LTR	12	
v (vph)	32	······································			·	<del>,</del> -		<del>.</del>	48		
C(m) (vph)	1057								274		
v/c	0.03								0.18		
95% queue length	0.09								0.62		
Control Delay	8.5								20.9		
os	Α								С		
.pproach Delay									20.9		
Approach LOS									С	•	

Fax: Phone: E-Mail: TWO-WAY STOP CONTROL (TWSC) ANALYSIS Analyst: Agency/Co.: McMillen Engineering Date Performed: 10/2/2005 Analysis Time Period: Saturday Base Route 40/ Hawes Road Intersection: Jurisdiction: Units: U. S. Customary Analysis Year: 2006 Project ID: Route 40 and Hawes Road East/West Street: Route 40 North/South Street: Hawes Road Study period (hrs): Intersection Orientation: EW Vehicle Volumes and Adjustments 6 Major Street Movements 2 1 3 Ŧ. T R T. Ţ R /olume 25 610 392 21 Peak-Hour Factor, PHF 0.78 0.84 0.84 0.58 Peak-15 Minute Volume 182 117 9 8 Hourly Flow Rate, HFR 32 726 466 36 Percent Heavy Vehicles Median Type/Storage Undivided RT Channelized? Lanes 1 1 0 Configuration LTTR Upstream Signal? , No No 12 Minor Street Movements 8 9 10 11  $\mathbf{T}$ R L  $\mathbf{T}$ L R Volume  $\overline{19}$ ō 14 0.79 0.50 0.58 Peak Hour Factor, PHF Peak-15 Minute Volume 6 0 6 Hourly Flow Rate, HFR 24 0 24 Percent Heavy Vehicles 3 3 3 Percent Grade (%) -10 Flared Approach: Exists?/Storage Νo RT Channelized? 0 Lanes 1 0 Configuration LTR Pedestrian Volumes and Adjustments Movements 14 13 15 16 0 Flow (ped/hr)

#### TWO-WAY STOP CONTROL SUMMARY

Analyst: TR

\deltagency/Co.: McMillen Engineering

Date Performed: 10/2/2005

Analysis Time Period: Weekday PM Base

Intersection: Route 40/ Marker Road

Jurisdiction:

Percent Grade (%)

Configuration

Lanes

Flared Approach: Exists?/Storage

Units: U. S. Customary Analysis Year: 2006

Project ID: Route 40 and Marker/Proposed Main Driveway

East/West Street: Route 40
North/South Street: Marker Road

Intersection Orientation: EW Study period (hrs): 0.25

intersection O	rientation:	EW		St	udy	perio	i (nrs):	. 0.25
	Vehi	cle Vol	umes and	l Adjus	tme	nts	· · · ·	
Major Street:	Approach	Ea	stbound			We:	stbound	
	Movement	1-	2	3	į	4	5	6
		ī	T	R	ł	L	Т	R
Volume			564	8		6	414	
Peak-Hour Fact	or, PHF		0.94	0.67		0.50	0.94	
Hourly Flow Ra	te, HFR		600	11.		12	440	
Percent Heavy	Vehicles		<del></del>			3		-1 <del>-1</del>
Median Type/St	orage .	Undiv.	ided			/	•	
RT Channelized	?							
Lanes			·1 0			0	· 1	
Configuration			TR			L		
"Jpstream Signa	1?		No				No	
Minor Street:	Approach	No.	rthbound			Sou	ithbound	1
	Movement	7	8	9	-	10	11	12
		L	T	R	Ì	L	T	R .
Volume		3	0	10				
Peak Hour Fact	or, PHF	0.75	0.50	0.62				
Hourly Flow Ra	te, HFR	4	0	16				
Percent Heavy	Vehicles	3	3	3				

Approach	EB	WB		-	Northboun	d		5	Southbou	nd
Movement	1	4	1	7	8	9	1	10	11	12
Lane Config		LT	1		LTR		J			
v (vph)		12			20				<del></del> .	<del>-</del>
C(m) (vph)		963			409					
v/c		0.0	l		0.05					
95% queue length		0.04	1		0.15					
Control Delay		8.8			14.3					
os		А			B					
.pproach Delay					14.3					
Approach LOS					В					

No

0

1

LTR

Phone: Fax: E-Mail: TWO-WAY STOP CONTROL (TWSC) ANALYSIS Analyst: Agency/Co.: McMillen Engineering Date Performed: 10/2/2005 -Analysis Time Period: Weekday PM Base Intersection: · Route 40/ Marker Road Jurisdiction: Units: U. S. Customary Analysis Year: 2006 Project ID: Route 40 and Marker/Proposed Main Driveway East/West Street: Route 40 North/South Street: Marker Road Intersection Orientation: EW Study period (hrs): 0.25 Vehicle Volumes and Adjustments Major Street Movements . 3 1 2 4 L R T T .olume 564 8 6 414 0.50 Peak-Hour Factor, PHF 0.94 0.67 0.94 Peak-15 Minute Volume 150 3 3 110 Hourly Flow Rate, HFR 600 11 12 440 Percent Heavy Vehicles 3 Median Type/Storage Undivided RT Channelized? Lanes 0 1 Configuration TR LTUpstream Signal? No No Minor Street Movements 8 9 10 11 12 L  $\mathbf{T}$ R L R Volume 3 0 10 0.75 Peak Hour Factor, PHF 0.50 0.62 Peak-15 Minute Volume 1 0 Hourly Flow Rate, HFR 4 0 16 Percent Heavy Vehicles 3 Percent Grade (%) Flared Approach: Exists?/Storage No RT Channelized? 1 Lanes 0 Configuration LTR Pedestrian Volumes and Adjustments Movements 1.3 14 15 Flow (ped/hr)

# TWO-WAY STOP CONTROL SUMMARY\_

Analyst: TR

Agency/Co.: McMillen Engineering

Date Performed: 10/2/2005 Analysis Time Period: Saturday Base

Intersection: Route 40/ Marker Road

Jurisdiction:

Units: U. S. Customary Analysis Year: 2006

Project ID: Route 40 and Marker/Proposed Main Driveway

East/West Street: Route 40
North/South Street: Marker Road

North/South St		ker Road							
Intersection O	rientation:	EW		St	ludy	period	(hrs):	0.25	
	tro in	dala mal		منتائم جاند			•	•	
Major Chroat		icle Volu		a Aajus	stmen		أم مديد ما		
Major Street:	Approach		stbound	2	1		tbound	_	
	Movement	1.	2	3	!	4	5	6	
•		${f L}$	T	R	1	T.	T	R	
Volume			·552	3		5	409		, <u> </u>
Peak-Hour Fact	or, PHF		0.80	0.75		0.62	0.87		
Hourly Flow Ra			689 ·	4		8	470		
Percent Heavy						3		- <del>-</del>	
Median Type/St		Undiv:	ided		/	,			
RT Channelized			<del></del>		Í				
Lanes	-		1	)		0	1		
Configuration			T	_		LT	-		
Upstream Signa	12		No	•			No	-	
podroum orgina			,110						
Minor Street:	Approach		cthbound				thbound		
	Movement	7	8	9	ı	10	11	12	
		L	$\mathbf{T}$	R	1	L.	${f T}$	R	
Volume		4	0	5					<del></del>
Peak Hour Fact	or. PHF	1.00	0.50	0.42					
Hourly Flow Ra		4	0	11					
Percent Heavy		3	3	3					
Percent Grade		J	<b>-</b> 5	J			3		
Flared Approach		/Storage	J	No	1	<b>,</b>	•		
Lanes	m. Barbes.	0	1 (		٠.			,	
Configuration		J	LTR	,					
			H + K						
	'Delaw	Ougue Ier	d+n	od Tarra	1 25	Co			
Approach	Delay, EB	Queue Ler WB		hbound		SetAT		bound	
Movement	1	4	7	Bunoana	9	1 10			
<del>-</del>	Τ.		1	=	9	j I	<i>)</i> .	1 12	
Lane Config		LT		LTR		1	•		
v (vph)		8	,	15		<u> </u>	<del></del>	· · · · · · · · · · · · · · · · · · ·	
- (- <del> </del>		000							

Approach	Delay, EB	Queue WB	Le		and Leve Torthbound		Ser		outhbou	nd
Movement	1	4	1	7	8	9	ì	10	11	12
Lane Config		LT	1		LTR		J	•		
v (vph)		8	_	_	15			· · · · · · · · · · · · · · · · · · ·	<del> </del>	<del></del>
C(m) (vph)		898	•		341					
v/c		0.03	Ł		0.04					
95% queue length		0.03	3		0.14					
Control Delay		9.0			16.0					
os	•	A			С					
.pproach Delay					16.0				•	
Approach LOS					С					

Phone: Fax: E-Mail: TWO-WAY STOP CONTROL (TWSC) ANALYSIS TR Analyst: Agency/Co.: McMillen Engineering Date Performed: 10/2/2005 Analysis Time Period: Saturday Base Route 40/ Marker Road Intersection: Jurisdiction: Units: U. S. Customary 2006 Analysis Year: Project ID: Route 40 and Marker/Proposed Main Driveway East/West Street: Route 40 North/South Street: Marker Road Intersection Orientation: EW Study period (hrs): 0.25 Vehicle Volumes and Adjustments Major Street Movements 6 1 2 3 4 L Т T R L R 552 3 5 409 olume 0.80 0.87 Peak-Hour Factor, PHF 0.75 0.62 Peak-15 Minute Volume 172 1 2 118 689 Hourly Flow Rate, HFR 4 8 470 3 Percent Heavy Vehicles \_\_\_ Median Type/Storage Undivided RT Channelized? 1 0 0 Lanes 1 Configuration TR LTUpstream Signal? No No Minor Street Movements 8 9 10 11 12 L Т R L  $\mathbf{T}$ R Volume 4 0 5 1.00 0.50 Peak Hour Factor, PHF 0.42 Peak-15 Minute Volume 1 0 3 4 0 11 Hourly Flow Rate, HFR 3 Percent Heavy Vehicles 3 3 3 Percent Grade (%) Flared Approach: Exists?/Storage No RT Channelized? 0 Lanes 1 0 LTR Configuration Pedestrian Volumes and Adjustments Movements 13 14 15 Flow (ped/hr) O 0

# TWO-WAY STOP CONTROL SUMMARY

Analyst:

.gency/Co.: McMillen Engineering

Date Performed:

10/2/2005

Analysis Time Period: Weekday PM Base

Intersection:

Route 40/Smith School Hse Road

Jurisdiction:

Units: U. S. Customary

Analysis Year:

2006

Project ID: Route 40 and Smith School House Road Intersection

East/West Street:

Route 40

North/South Street:

Dinner Bell Road

Intersection Orientation: EW

Major Street: Approa		olumes ar Eastbound			estbound		
Moveme		2· .	3	4	5	6 .	
	L	T	R	L	${f T}$	R	
Volume	16	558	<del></del>		394	8	
Peak-Hour Factor, PHE	0.6	7 0.94			0.94	0.67	
Hourly Flow Rate, HFF	23	593			419	11	
Percent Heavy Vehicle	es 3						
Median Type/Storage RT Channelized?	Und	ivided		1.	-		
Lanes	1	0 1			1	0	
Configuration		LT			T	R į	
Upstream Signal?		No		•	No		
Minor Street: Approa	ch l	Northbour	ıd	Sc	outhbound	<u> </u>	
Moveme	nt 7	8	9	10	11	12	
•	. L	${f T}$	R	L	T	R	
Volume			<u> </u>	12	0	26	
Peak Hour Factor, PHF	1			0.75	0.38	0.93	
Hourly Flow Rate, HFR				16	0	27	
Percent Heavy Vehicle	S .			3	3	3	
Percent Grade (%)					10		
Flared Approach: Exi	sts?/Storac	ge `	•	/		No /	
Lanes				0	1 (	כ	
Configuration					LTR		

Approach	EB	WB			Northbour	ıd		Sc	outhbound	
Movement	1	4		7	8	9		10.	11	12
Lane Config	LT		1				1		LTR	
v (vph)	23								43	
C(m) (vph)	1124								392	
v/c	0.02								0.11	
95% queue length	0.06								0.37	
Control Delay	8.3								15.3	
OS	A								С	
pproach Delay									15.3	
Approach LOS									С	

Phone: Fax: E-Mail: TWO-WAY STOP CONTROL (TWSC) ANALYSIS Analyst: Agency/Co.: McMillen Engineering Date Performed: 10/2/2005 Analysis Time Period: Weekday PM Base Route 40/Smith School Hse Road Intersection: Jurisdiction: Units: U. S. Customary 2006 Analysis Year: Project ID: Route 40 and Smith School House Road Intersection East/West Street: Route 40 North/South Street: Dinner Bell Road Study period (hrs): 0.25 Intersection Orientation: EW Vehicle Volumes and Adjustments 6 Major Street Movements ĺ 2 3 R L Т R L Т 394 olume 16 558 8 Peak-Hour Factor, PHF 0.67 0.94 0.94 0.67 105 3 Peak-15 Minute Volume 6 148 11 Hourly Flow Rate, HFR 23 593 419 Percent Heavy Vehicles Median Type/Storage Undivided RT Channelized? Lanes 0 1 TR Configuration LT No Upstream Signal? No Minor Street Movements 10 11 12 8 R L Т R L Т 12 0 26 Volume Peak Hour Factor, PHF 0.75 0.38 0.93 0 7 Peak-15 Minute Volume 4 16 0 27 Hourly Flow Rate, HFR 3 3 Percent Heavy Vehicles 3 10 Percent Grade (%) Flared Approach: Exists?/Storage No RT Channelized? Lanes 0 1 Configuration LTR Pedestrian Volumes and Adjustments Movements 14 16 13 15 Flow (ped/hr)

# TWO-WAY STOP CONTROL SUMMARY

Analyst: TR

.gency/Co.: McMillen Engineering

Date Performed: 10/2/2005

Analysis Time Period: Saturday Peak Base

Intersection: Route 40/Smith School Hse Road

Jurisdiction:

\*Units: U. S. Customary

Analysis Year: 2006

Project ID: Route 40 and Smith School House Road Intersection

East/West Street: Route 40

North/South Street: Dinner Bell Road

North/South St	reet: Dinr	ner Bell	Road						
Intersection C	rientation:	EW		5	study	perio	d (hrs)	: 0.25	5
	Vohi	olo Vol	imaa nn	4 741.	ıctmo	nto			
Major Street:	Approach	cle Vol	umes and stbound	ı Adju	12 rille	***	stbound		
major screer.	Movement	აი. 1	2	3	1	4	5 CDOMIG	6	
	Movement	L	T	R	i	L	T	R	
	. <u></u>					<del></del>	400	-10	
Volume	DUD.	14	504				402	10	
Peak-Hour Fact		0.50	0.87				0.87	0.50	
Hourly Flow Ra		28	579				462	20	
Percent Heavy		3				,			
Median Type/St RT Channelized		Undiv.	ıaea			/			
Lanes	•	٥	1				1	0	
Configuration		L'					- <del>-</del>	R.	
Upstream Signa	1.2	Д.	No ·				No		
povadam dagaa	•						.,,		
Minor Street:	Approach	No	cthbound	į.		So	uthboun	d	
	Movement	7	8	9	- 1	10	11	12	
		${f L}$	T	R	1.	L	T	R	
Volume	<del></del>	<del></del>		·		8	0	12	
Peak Hour Fact	or, PHF					0.40	0.38	0.60	
Hourly Flow Ra						19	0	19	
Percent Heavy	•					3	3	3	
Percent Grade							10		
Flared Approac		Storage	,		/			No	/
Lanes	•	,				0	1	0	
Configuration							LTR		
		· ·							
	Delay, Q	ueue Ler	ngth, an	d Lev	el o	f Serv	i.ce		
Approach	EB	WB		hboun				hbound	
Movement	1	4	7	8	9	1		11	12
Lane Config	LT	í				i		LTR	

Approach	_Delay, EB	₩B	-		h, and Le Northboo		001		outhbound	
Movement	1	4		7	8	9	1	10	11	12
Lane Config	LT		ļ				Į		LTR	
v (vph)	28								38	
C(m) (vph)	1075								325	
v/c	0.03								0.12	
95% queue length	0.08								0.39	
Control Delay	8.4								17.5	
os	Α								С	
pproach Delay									17.5	
Approach LOS									С	

Fax: Phone: E-Mail: TWO-WAY STOP CONTROL (TWSC) ANALYSIS Analyst: Agency/Co.: McMillen Engineering Date Performed: 10/2/2005 Analysis Time Period: Saturday Peak Base Route 40/Smith School Hse Road Intersection: Jurisdiction: Units: U. S. Customary 2006 Analysis Year: Project ID: Route 40 and Smith School House Road Intersection East/West Street: Route 40 North/South Street: Dinner Bell Road Study period (hrs): 0.25 Intersection Orientation: EW .Vehicle Volumes and Adjustments Major Street Movements 6 1 2 3 4 . T 3 Ţ, T ĭ. R 10 olume 14 504 402 Peak-Hour Factor, PHF 0.50 0.87 0.87 0.50 7 116 5 Peak-15 Minute Volume 145 28 Hourly Flow Rate, HFR 579 462 20 Percent Heavy Vehicles 3 Undivided Median Type/Storage RT Channelized? 1 Lanes LT TR Configuration . Upstream Signal? No No Minor Street Movements 8 10 11  $\overline{12}$ T R R  $\Gamma$  $\mathbf{L}$ T 12 Volume 8 ō 0.38 0.40 0.60 Peak Hour Factor, PHF Peak-15 Minute Volume 5 0 5 19 0 19 Hourly Flow Rate, HFR 3 3 Percent Heavy Vehicles 3 Percent Grade (%) 10 Flared Approach: Exists?/Storage No RT Channelized? 0 Lanes 1 LTR Configuration Pedestrian Volumes and Adjustments Movements 13 14 15 16 Flow (ped/hr)

#### TWO-WAY STOP CONTROL SUMMARY

Analyst: TR

.gency/Co.: McMillen Engineering

Date Performed: 10/2/2005

Analysis Time Period: Weekday PM Base

Intersection: Route 40/ Dinner Bell Road

Jurisdiction:

Configuration :

Units: U. S. Customary Analysis Year: 2006

Project ID: Route 40 and Dinner Bell Road Intersection

East/West Street: Route 40

North/South Street: Dinner Bell Road Intersection Orientation: EW

Intersection Orientation:	EW		St	udy	period	d (hrs)	: 0.25	5
Vehi	cle Vol	umes and	d Adjus	tme	nts			
Major Street: Approach		stbound	-			tbound	i	
Movement	1	.2	3	1	4	5	6	
	L	T	R	!	L .	Ţ	R	
Volume	26	508	47	-	14	360	38	<u></u>
Peak-Hour Factor, PHF	0.81	0.94	0.78		0.58	0.94	0.79	
Hourly Flow Rate, HFR	32	540	60		24	382	48	
Percent Heavy Vehicles	3				3			•
Median Type/Storage RT Channelized?	Undiv:	ided	. ,		/			
Lanes	0	1 (	) .		0	1	0	
Configuration	. Li	ľR			Lĩ	'R		
"pstream Signal?		No				No		
Minor Street: Approach	No	thbound	i		Sou	thbour	ıd	<del></del>
Movement	7	8	9	1	10	11	12	
	L	T	R	l	L .	T	R	
Volume	26	7	16		36	3	15	
Peak Hour Factor, PHF	0.81	0.58	0.67		0.75	0.38	0.63	
Hourly Flow Rate, HFR	32	12	23		48	7	23	
Percent Heavy Vehicles	3	3 -	3		3	3	3	
Percent Grade (%)		-4	•			3		
Flared Approach: Exists?/	Storage		No	1			No	/
Lanes	0	1 0	)		0	1.	0	

Approach	_Delay, EB	Queue Le		ind Lev thboun		Ser		outhbound	<del>1</del>
Movement Lane Config	1 LTR	4   LTR	7	8 LTR	9	! [	10	11 LTR	12
v (vph)	32	24	<del></del>	67				78	
C(m) (vph)	1124	972		224				210	
v/c	0.03	0.02		0.30				0.37	
95% queue length	0.09	0.08		1.21				1.61	
Control Delay	8.3	8.8		27.8				31.9	
າຣ	Α	Α		D				Ð	
pproach Delay				27.8				31.9	
Approach LOS				D				D	

LTR

LTR

Phone: Fax: E-Mail: TWO-WAY STOP CONTROL(TWSC) ANALYSIS Analyst: Agency/Co.: McMillen Engineering Date Performed: 10/2/2005 Analysis Time Period: Weekday PM Base -Intersection: Route 40/ Dinner Bell Road Jurisdiction: Units: U. S. Customary Analysis Year: 2006 Project ID: Route 40 and Dinner Bell Road Intersection Route 40 East/West Street: North/South Street: Dinner Bell Road Study period (hrs): Intersection Orientation: EW Vehicle Volumes and Adjustments 6 Major Street Movements 1 2 3 4 L  $\mathbf{T}$ R L Т R 508 360 olume 26 47 14 38 Peak-Hour Factor, PHF 0.81 0.94 0.78 0.58 -0.94 0.79 Peak-15 Minute Volume 8 135 15 6 96 12 Hourly Flow Rate, HFR 32 60 24 382 48 540 Percent Heavy Vehicles 3 Median Type/Storage Undivided RT Channelized? Lanes 1 1 LTR Configuration LTR Upstream Signal? No No Minor Street Movements 11  $\overline{12}$ 8 10 Т R'  $\mathbf{L}$ T R L Volume 26 16 36 3 15 0.31 Peak Hour Factor, PHF 0.58 0.67 0.75 0.38 0.63 Peak-15 Minute Volume 8 3 6 12 2 6. Hourly Flow Rate, HFR 32 12 23 7 23 48 Percent Heavy Vehicles 3 3 3 3 3 3 Percent Grade (%) Flared Approach: Exists?/Storage No 1 No RT Channelized? Lanes 0 1 0 0 0 1

Movements	Pedestrian 13	Volumes 14	and Ad 15	justments 16	
Flow (ped/hr)		0	0	0	

LTR

LTR

Configuration

# TWO-WAY STOP CONTROL SUMMARY

Analyst: TR

gency/Co.: McMillen Engineering

Date Performed: 10/2/2005 Analysis Time Period: Saturday Base

Intersection: Route 40/ Dinner Bell Road

Jurisdiction:

Units: U. S. Customary

Analysis Year: 2006

Project ID: Route 40 and Dinner Bell Road Intersection

East/West Street: Route 40

North/South Street: Dinner Bell Road

Intersection Orientation: EW Study period (hrs): 0.25

Major Street: Approach	icle Volu	stbound	i Adjus	· CIIIC		stbound					
Movement		2	3	ŀ	4	5	6				
	L	T	R	i	L	T	R <sub>.</sub>				
Volume	19	504	28		9	342	15				
Peak-Hour Factor, PHF	0.75	0.87	0.63		0.68	0.87	0.70				
Hourly Flow Rate, HFR	25	579	44		13	393.	21				
Percent Heavy Vehicles	3	<b></b>			3						
Median Type/Storage RT Channelized?	Undivi	Undivided				/					
Lanes	0	· 1 (	)		0	. 1	0 .				
Configuration	Li	LTR				LTR .					
Upstream Signal?		No				No					
Minor Street: Approach	Northbound				Southbound						
Movement	7	8	9		10	11	12				
	$\cdot \mathbf{L}$	<b>T</b>	R	ı	L	Т	R				
/olume	54	2	15		16	3	15	_			
Peak Hour Factor, PHF	0.84	0.50	0.42		0.50	0.75	0.62				
Hourly Flow Rate, HFR	64	4	35		32	4	24				
Percent Heavy Vehicles	3	3	3		3	3	3				
Percent Grade (%)		-4				3					
Flared Approach: Exists?	/Storage		No	/			No	/			
Lanes	0	1 0	)		0	1 (	0				
Configuration		LTR				LTR					

Approach	_Delay, EB	Queue Len	gth, and Level of Northbound	ServiceSouth	oound
Movement Lane Config	1 LTR	4   LTR	7 8 9 LTR	1 10 1:	l 12 Tr
v (vph)	25	13	103	61	)
C(m) (vph)	1140	953	225	2	10
v/c	0.02	0.01	0.46	0	. 25
95% queue length	0.07	0.04	2.21	0	. 96
Control Delay	8.2	8.8	33.8	24	1.9
os	Α	A	D	(	
.pproach Delay			33.8	24	1.9
Approach LOS			. D	-	

Phone: Fax: E-Mail: TWO-WAY STOP CONTROL (TWSC) ANALYSIS Analyst: TR McMillen Engineering Agency/Co.: Date Performed: 10/2/2005 Analysis Time Period: Saturday Base Intersection: Route 40/ Dinner Bell Road Jurisdiction: Units: U. S. Customary Analysis Year: 2006 Project ID: Route 40 and Dinner Bell Road Intersection East/West Street: Route 40 North/South Street: Dinner Bell Road Intersection Orientation: EW Study period (hrs): 0.25 Vehicle Volumes and Adjustments Major Street Movements 6 1 2 3 4 L T R L Ţ R olume  $\overline{19}$ 28 342 15 504 Peak-Hour Factor, PHF 0.75 0.87 0.70 0.87 0.63 0.68 . 98 Peak-15 Minute Volume 6 145 11 3 5 25 Hourly Flow Rate, HFR 579 44 13 393 21 Percent Heavy Vehicles 3 3 Median Type/Storage Undivided RT Channelized? 0 . 1 Lanes 1 0 Configuration LTR LTR Upstream Signal? No No Minor Street Movements 8 9 10 11 12 L Т Ŕ L Т R Volume 54 2 15 16 3 15 0.50 0.75 Peak Hour Factor, PHF 0.84 0.50 0.42 0.62 Peak-15 Minute Volume 9 16 1 8 1 6 Hourly Flow Rate, HFR 64 4 35 32 4 24 Percent Heavy Vehicles 3 3 3 3 3 3 Percent Grade (%) Flared Approach: Exists?/Storage No ÑΟ RT Channelized? Lanes 1 1 0 0 Configuration LTR LTR Pedestrian Volumes and Adjustments Movements 13 14 15 16 Flow (ped/hr)

# APPENDIX 2

# CAPACITY ANALYSIS (2006 DEVELOPED CONDITIONS)

# TWO-WAY STOP CONTROL SUMMARY

Analyst:

\gency/Co.: McMILLEN ENGINEERING

Date Performed: 11/23/2005

Analysis Time Period: WEEKDAY PM PEAK DEVELOPED

Intersection: SR40 / SR 381S
Jurisdiction: WHARTON TOWNSHIP

Units: U. S. Customary

Analysis Year: 2006

Project ID: 2005-319

East/West Street: ROUTE 40
North/South Street: SR 381S
Intersection Orientation: EW

		•			2	L	,	•	
	Vel	nicle Volu	umes an	d Adjus	tme	nts		•	
Major Street:	Approach		stbound	_					
5	Movement	1	2	3	i	4	5	6	
		${f L}$	T	R	-	L	${f T}$	R	
Volume	<del></del>		511	54		52	513		
Peak-Hour Fact	or, PHF		0.92	0.75		0.72	0.91		
Hourly Flow Ra	•		555	72		72	563		
Percent Heavy						3			
Median Type/St		Undivi	ded			1.			
RT Channelized						•			
Lanes			1	0		0	1		
Configuration			_	R		$\mathbf{L}'$	r		
Upstream Signa	1?		No	• `			No		
- <u>F</u> = = = ++== + + + + + + + + + + + + + +						•			
Minor Street: Approa			cthboun	d	Southbound				
	Movement	7	8	9	- 1	10 '	11	12	
		L	T	R	1	L	Т	R	
Volume		51	0	57				·- · · · · · · · · · · · · · · · · · ·	
Peak Hour Fact	or, PHF	0.71	1.00	1.00					
Hourly Flow Ra	te, HFR	71	0	57					
Percent Heavy	Vehicles	3	3	3					
Percent Grade			0				0		
Flared Approac	h: Exists?	/Storage		No	1			/	
Lanes		Õ	1	0				·	
Configuration			LTR						
	Dola	Ougus Isa	ath a	nd Iarra	1 6	f comi		<u></u>	
Approach	Uelay, EB	Queue Len		na Leve thbound		r servi		nbound	
Movement	1	4 1	7	8	9	! ]		11 12	
	_	!	•		-				

	Delay,	Queue	Le	ngtr	ı, and Leve	∋T of	Set	rvice		
Approach	EB	WB	Northbound					S	nd	
Movement	1	4	j	7	8	9	- 1	10	11	12
Lane Config		LT	1		LTR		ţ			
v (vph)		72			128			<del></del>		
C(m) (vph)		950			236					
v/c		0.08	3		0.54					
95% queue length		0.29	5		2.92					
Control Delay		9.1			37.0					
TOS		A			E					
.pproach Delay					37.0					
Approach LOS					Ξ					

Fax: Phone: E-Mail: TWO-WAY STOP CONTROL (TWSC) ANALYSIS Analyst: McMILLEN ENGINEERING Agency/Co.: Date Performed: 11/23/2005 Analysis Time Period: WEEKDAY PM PEAK DEVELOPED Intersection: SR40 / SR 381S Jurisdiction: WHARTON TOWNSHIP Units: U. S. Customary Analysis Year: 2006 Project ID: 2005-319 East/West Street: ROUTE 40 North/South Street: SR 3815 Study period (hrs): 0.25 Intersection Orientation: EW Vehicle Volumes and Adjustments 6 Major Street Movements 2 1 3 L Т R L Т R 54 52 olume 511 513 Peak-Hour Factor, PHF 0.92 0.75 0.72 0.91 Peak-15 Minute Volume 139 18 18 141 7.2 72 Hourly Flow Rate, HFR 555 563 Percent Heavy Vehicles . Median Type/Storage Undivided RT Channelized? Lanes 0 1 Configuration TR LTUpstream Signal? No No 8. Minor Street Movements 9 10 11 12  $\mathbf{T}$ R  $\mathbf{L}$ Т L R Volume 51 57 Peak Hour Factor, PHF 0.71 1.00 1.00 Peak-15 Minute Volume 18 0 14 Hourly Flow Rate, HFR 71 0 57 Percent Heavy Vehicles 3. Percent Grade (%) 0 Flared Approach: Exists?/Storage No RT Channelized? Lanes 1 0 Configuration LTR Pedestrian Volumes and Adjustments Movements 14 15 16 0 Flow (ped/hr)

#### TWO-WAY STOP CONTROL SUMMARY

Analyst:

Approach LOS

Agency/Co.: McMILLEN ENGINEERING

Date Performed: 11/23/2005

Analysis Time Period: SATURDAY PEAK DEVELOPED

Intersection: SR40 / SR 381S Jurisdiction: WHARTON TOWNSHIP

Units: U: S. Customary

Analysis Year: 2006

Project ID: 2005-319

East/West Street: ROUTE 40 North/South Street: SR 381S Intersection Orientation: EW

Study period (hrs): 0.25

THICETSECTION O	Liencacion	. GW		31	Luuy	berro	u (III.5).	0.2	5
	Vel	nicle Vol		Adjus	stme				
Major Street:	Approach	Ea	stbound			We:	stbound		
	Movement	1	2.	3	- 1	4	5	6	
		${f L}$	T	R	- 1	L	T	R	
Volume			560	47		50	372		
Peak-Hour Facto	or, PHF		0.84	0.65		0.74	0.84		
Hourly Flow Rat	te, HFR		666	72		67	442		
Percent Heavy V	/ehicles		<b></b> .			3			
Median Type/Sto		Undiv	ided			/			
RT Channelized:				•		•			
Lanes			1 0			0	1		
Configuration	•		TR			L'	r .		
Upstream Signal	12		No				Νo		•
-,r	•		+						
Minor Street:	Approach	No	rthbound			Soi	ithbound		
	Movement	7	8	9	i	10	11	12.	
		L	T	R	í	L	Т	R	-
					•				
Volume	<del>/</del> .	31	0	68			<del></del>	• •	···
Peak Hour Facto	or, PHF	0.86	1.00	0.78					
Hourly Flow Rat		36	0	87					
Percent Heavy V		3	3	3					
Percent Grade			7				0		
Flared Approach	: Exists?	/Storage		No	1				/
Lanes		Ő	1 0						
Configuration			LTR						
								·	-
	Delay,	Queue Le	ngth, and	d Leve	1 0	f Servi	ice		
Approach	ΞB	WB	North	nbound	l .		South	bound	
Movement	1	4		3	9	1 3	10	1	12
Lane Config	•	LT	I	LTR		I			
v (vph)		67		123		<del></del>		<del></del>	
C(m) (vph)		863		297					
7/c		0.08		0.41					
95% queue lengt	.h	0.25		1.95					
Control Delay		9.5	2	25.4					
OS	=	A		D					
.pproach Delay			2	25.4					
1				ь.					

D

Phone: Fax: E-Mail: TWO-WAY STOP CONTROL (TWSC) ANALYSIS Analyst: McMILLEN ENGINEERING Agency/Co.: Date Performed: 11/23/2005 Analysis Time Period: SATURDAY PEAK DEVELOPED SR40 / SR 381S Intersection: Jurisdiction: WHARTON TOWNSHIP Units: U. S. Customary Analysis Year: 2006 Project ID: 2005-319 East/West Street: ROUTE 40 North/South Street: SR 381S Study period (hrs): 0.25 Intersection Orientation: EW Vehicle Volumes and Adjustments 6 Major Street Movements 1 2 3 R . L  $\mathbf{T}$ R  $\mathbf{L}$ Т 372 olume 560 50 47 0.74 Peak-Hour Factor, PHF 0.84 0.65 0.84 17 . Peak-15 Minute Volume 167 18 111 Hourly Flow Rate, HFR 666 72 67 442 Percent Heavy Vehicles 3 Median Type/Storage Undivided RT Channelized? Lanes 1 0 LTConfiguration TR Upstream Signal? No No Minor Street Movements 9 10 11 12 8 Т R L Ĺ T З Volume 31 0 68 1.00 0.78 0.86 Peak Hour Factor, PHF Peak-15 Minute Volume 9 0 22 36 0 Hourly Flow Rate, HFR 87 3 3 Percent Heavy Vehicles 0 Percent Grade (%) Flared Approach: Exists?/Storage No RT Channelized? Lanes 0 1 Configuration LTR Pedestrian Volumes and Adjustments Movements 13 1415 16

Flow (ped/hr)

### TWO-WAY STOP CONTROL SUMMARY

Analyst:

Agency/Co.: McMILLEN ENGINEERING

Date Performed: 11/23/2005

Analysis Time Period: WEEKDAY PM PEAK DEVELOPED

Intersection: SR40 / SR 381N Jurisdiction: WHARTON TOWNSHIP

Units: U. S. Customary

Analysis Year: 2006

Project ID: 2005-319

East/West Street: ROUTE 40 North/South Street: SR 381N Intersection Orientation: EW

Study period (hrs): 0.25

incorporation office	medezon.			~	, c. u.u.y	POLLO	a (1120)	, . 0, 2.	•
	Veh	nicle Volu	mes an	ıd Adjı	stme	nts_			
Major Street: Ap	proach		tbound				stbound	i	
	vement	1	2	3	1	4	5	6	
		L.	T	R	j	L	${f T}$	R	
Volume	<del></del>	61	507				517	17	
Peak-Hour Factor,	PHF	0.88	0.92				0.91	0.85	
Hourly Flow Rate,		69	551				568	19	
Percent Heavy Veh		3		·					
Median Type/Stora		Undivi				,			•
	ige	OUGIVI	uea			/			
RT Channelized? .		0					7	Λ	
Lanes		0	1 .				1	0	
Configuration		LT		•				ľR	
Upstream Signal?			No				No		
Minor Street: Ap	proach	Mor	thboun	d		901	uthbour		
	vement	7	8.		1	10	11	12	
I'I (.	ASMETIC	, L	T	R	 	$\Gamma$ .	T	R	
		ы	ı	Ν	1	ή,	Τ	K	
Volume			·			42	0	48	<del></del>
Peak Hour Factor,	PHF					0.71	1.00	0.68	
Hourly Flow Rate,						59	0	70	
Percent Heavy Veh						3	0	3	
Percent Grade (%)			0			_	<del>-</del> 7	-	
Flared Approach:		/Storage	•		/		•	No	1
Lanes	BALGES.	, ocorage			,	. 0	1	0	,
Configuration						Ŭ	LTR	•	
,onrigaración							1111		
······································					-				
		Queue Len				f Servi			
Approach	EΒ	WB		thboun				hbound	
Movement	1	4 !	7	8	9	! .	10	11	12
Lane Config	LT	l						LTR	
/ (vph)	69	<del></del> _						129	<del>_</del>
C(m) (vph)	983							270	
//c	0.07							0.48	
5% queue length	0.23							2.41	
	8.9							30.0	
Control Delay									
OS Dalan	A							D	
pproach Delay								30.0	
Approach LOS								D	

Phone: E-Mail: Fax:

TWO-WAY STOP CONTROL (TWSC) ANALYSIS\_\_\_\_

Analyst:

Agency/Co.: McMILLEN\_ENGINEERING

Date Performed: 11/23/2005

Analysis Time Period: WEEKDAY PM PEAK DEVELOPED

Intersection: SR40 / SR 381N
Jurisdiction: WHARTON TOWNSHIP

Units: U. S. Customary

Analysis Year: 2006

Project ID: 2005-319

East/West Street: ROUTE 40
North/South Street: SR 381N
Intersection Orientation: EW

Study period (hrs): 0.25

1 L 61	2 T	3 R	4 L	- 5 T	6	
		R	L	ıγı	_	
61			•	T	Ŕ	
	507			517	17	
0.88	0.92			0.91	0.85	
17	138			142	5	
69	551			- 568	19	
3						
Undi	vided		/			
0	1			1 (	0	
I	$\mathbf{T}_{\mathbf{c}}$			T	3	
	No			No		
7	8	9	10	11	12	
L	T	R	Ľ.	T	R	
			42	0	48	
			0.71	1.00	0.68	
			15	0	18	
			59	0	70	
			3	0	3	
	0			-7		
/Storag	е		/		No	/
			Λ	1 (	1	
			U		,	
	69 3 Undi 0 I	69 551 3 Undivided 0 1 LT No 7 8 L T	69 551 3 Undivided  0 1 LT No  7 8 9 L T R	69 551 3 Undivided /  0 1 LT No  7 8 9 10 L T R L  42 0.71 15 59 3	69 551 3	69 551 568 19 3 Undivided / TR No

Movements	Pedestrian 13	Volumes 14	and Ad 15	justments_ 16	
Flow (ped/hr)	0		0	0	<u> </u>

#### TWO-WAY STOP CONTROL SUMMARY

Analyst:

!gency/Co.: McMILLEN ENGINEERING

Date Performed: 11/23/2005

Analysis Time Period: SATURDAY PEAK DEVELOPED

Intersection: SR40 / SR 381N Jurisdiction: WHARTON TOWNSHIP

Units: U. S. Customary

Analysis Year: 2006

Project ID: 2005-319

East/West Street: ROUTE 40 North/South Street: SR 381N

Major Street:	Approach	icle Vol Ba	stbound	•	io cino		stbound	
,	Movement	1	2	3	1	4	5	6
		L	T	R	i	L	· T	R
Volume		81	547		·		373	56
Peak-Hour Fact	or, PHF	0.91	0.84				0.84	0.78
Hourly Flow Ra	te, HFR	89	651				444	71
Percent Heavy	Vehicles	3	<del>-</del> -					
Median Type/St RT Channelized		Undiv.	ided	-		/		
Lanes		0	1				1 (	)
Configuration		L'	r				TF	₹
<sup>IJ</sup> pstream Signa	1?		No				No	
Minor Street:	Approach	No	rthbound	i i		Soi	thbound	
	Movement	7	8 .	9	İ	10	11	12
		L	Ť	R	1	L	T	. R
Volume			· · · · · ·			40	0 .	49
Peak Hour Fact						0.70	1.00	0.77
Hourly Flow Ra						57	0	63
Percent Heavy						3	0	3
Percent Grade	•		0				-7	
Flared Approac	h: Exists?/	Storage			/			No /
Lanes						0	1 0	)
Configuration							LTR	

Approach	_Delay, EB	Queue WB	Le	ngt		nd Le	evel of	Ser		Southbound	
Movement	1	4		7		8	9	1	10	1.1	12
Lane Config	LT		Ì		•			1		LTR	
v (vph)	89								<u>-</u>	120	
C(m) (vph)	1046									260	
v/c	0.09									0.46	
95% queue length	0.28									2.28	
Control Delay	8.8									30.2	
os	A									D	
.pproach Delay										30.2	
Approach LOS										D	

Phone: . Fax: E-Mail: TWO-WAY STOP CONTROL (TWSC) ANALYSIS Analyst: Agency/Co.:. McMILLEN ENGINEERING Date Performed: 11/23/2005 Analysis Time Period: SATURDAY PEAK DEVELOPED Intersection: SR40 / SR 381N · WHARTON TOWNSHIP Jurisdiction: Units: U. S. Customary Analysis Year: 2006 Project ID: 2005-319 East/West Street: ROUTE 40 North/South Street: SR 381N Study period (hrs): 0.25 Intersection Orientation: EW Vehicle Volumes and Adjustments Major Street Movements 3 6 2 1 L Т T R olume 81 547 373 56 Peak-Hour Factor, PHF 0.91 0.84 0.84 0.78 Peak-15 Minute Volume 22 163 111 18 Hourly Flow Rate, HFR 89 651 444 71 Percent Heavy Vehicles 3 Median Type/Storage Undivided RT Channelized? Lanes 0 1 0 1 Configuration LT TR Upstream Signal? No No Minor Street Movements 10 11 12 8 L  $\mathbf{T}$ R L Ţ R Volume 40 49 0 0.70 0.77 Peak Hour Factor, PHF. 1.00 14 Peak-15 Minute Volume 0 16 57 0 Hourly Flow Rate, HFR 63 Percent Heavy Vehicles 0 3 Percent Grade (%) Flared Approach: Exists?/Storage No RT Channelized? Lanes 0 1 0 LTR Configuration Pedestrian Volumes and Adjustments Movements 13 14 15 ' 16 Flow (ped/hr) 0 0 0

#### TWO-WAY STOP CONTROL SUMMARY

Analyst:

igency/Co.: MCMILLEN ENGINEERING

Date Performed: 11/23/2005

Analysis Time Period: WEEKDAY PM PEAK DEVELOPED

Intersection: SR40 / HAWES ROAD Jurisdiction: WHARTON TOWNSHIP

Units: U. S. Customary
Analysis Year: 2006 Analysis Year:

Project ID: 2005-319

East/West Street: ROUTE 40 North/South Street: HAWES ROAD

Intersection C	rientation:	ΞW		S	tudy	perio	od (hrs)	: 0.25	<b>;</b>
	Veh	icle Vol	umes and	Adju	stme	nts			
Major Street:	Approach	Ea	stbound			We	stbound		
	Movement	1	2 .	3	1	4	5	6	
		${f L}$	T .	R	İ	L	Т.	R.	
Volume	<del></del>	21	529	<del></del>		<del></del>	373	37	
Peak-Hour Fact	or, PHF	0.66	0.92				0.91	0.66	
Hourly Flow Ra		31	574				409	56	
Percent Heavy	Vehicles	3						~-	
Median Type/St		Undiv.	ided			/ ·			•
RT Channelized	1.2	0	2				, ,	0	
Lanes		0	1					0	
Configuration	.1.7	Ľ					T	7.	
Upstream Signa	17.		No :				ИО		
_	Approach		rthbound				uthbound		
	Movement	7	8	9	1	10	11	12	
		L	T	R	1	L	Т	R	
Volume		· · · · · ·		<del></del>		37	0	42	
Peak Hour Fact	or, PHF					0.62	1.00	0.66	
Hourly Flow Ra	te, HFR					59	0	63	
Percent Heavy	Vehicles					3	0	3	
Percent Grade	(웅)		Ó				-10		
Flared Approac		/Storage			/			МО	/
Lanes						0	1 (	) .	
Configuration							LTR		
	<u> </u>								
	Delay,	Queue Lei				f Serv			
Approach	EB	WB	North	nboun				nbound	
Movement	1	4	7 8	}	9	Į.	10 1	11	12
Lane Config	LT	i				)	I	LTR	
v (vph)	31			- <del></del>	<del></del>		1	.22	
Class (seeb)	1001						_	10	

	_Delay,	Queue	Le	ngt	h, and Lev		Ser			
Approach	EΒ	WB			Northboun	d		\$6	outhboun	d
Movement	1	4	- 1	7	8	9	- 1	10	11	12
Lane Config	LT		į				}		LTR	
v (vph)	31	<u> </u>	_ <del></del> _		<del></del>			<del></del> -	122	
C(m) (vph)	1091								348	
v/c	0.03								0.35	
95% queue length	0.09								1.54	
Control Delay	8.4								20.8	
∵os	A								С	
.pproach Delay									20.8	
Approach LOS									C	

Phone: Fax: E-Mail: TWO-WAY STOP CONTROL (TWSC) ANALYSIS . Analyst: Agency/Co.: McMILLEN ENGINEERING Date Performed: 11/23/2005 Analysis Time Period: WEEKDAY PM PEAK DEVELOPED Intersection: SR40 / HAWES ROAD Jurisdiction: WHARTON TOWNSHIP Units: U. S. Customary Analysis Year: 2006 Project ID: 2005-319 East/West Street: ROUTE 40 North/South Street: HAWES ROAD Intersection Orientation: EW Study period (hrs): 0.25 Vehicle Volumes and Adjustments 6 Major Street Movements 1 2 3 4 L Т . R L T R olume 21 529 373 37 0.66 0.92 0.91 0.66 Peak-Hour Factor, PHF Peak-15 Minute Volume 144 102 14 8 Hourly Flow Rate, HFR 31 574 409 56 Percent Heavy Vehicles 3 Median Type/Storage Undivided RT Channelized? Lanes 0 1 1 0 TRConfiguration LT Upstream Signal? No No Minor Street Movements 7 8 9 10 11 12 L T R L  $\mathbf{T}$ Ŕ Volume 37 0 42 1.00 Peak Hour Factor, PHF 0.62 0.66 Peak-15 Minute Volume 15 0 16 Hourly Flow Rate, HFR 59 0 63 3 0 3 Percent Heavy Vehicles Percent Grade (%) -10Flared Approach: Exists?/Storage No RT Channelized? 0 Lanes 1 0 Configuration LTR Pedestrian Volumes and Adjustments Movements 13 14 15 16 Flow (ped/hr)

#### TWO-WAY STOP CONTROL SUMMARY

Analyst:

\gency/Co.: MCMILLEN ENGINEERING

Date Performed: 11/23/2005

Analysis Time Period: SATURDAY PEAK DEVELOPED

SR40 / HAWES ROAD Intersection: Jurisdiction: WHARTON TOWNSHIP

Units: U. S. Customary 2006 Analysis Year:

Project ID: 2005-319

Control Delay

.pproach Delay

Approach LOS

TOS

8.4

Α

East/West Street: ROUTE 40

North/South Stree Intersection Or	eet: HAWE	S ROAD EW		5	Studv	perio	d (hrs):	0.25	
			_	•		-			
<del> </del>			umes and	Adjı	istme.		•		
	Approach		stbound	_			stbound		
· ·	Movement	1 .	2	3	1	4	5.	6	
		L	T	Ŕ	1	L	T	R	
Volume	·	25	588				361	21	<u> </u>
Peak-Hour Factor	r, PHF	0.78	0.84				0.84	0.58	•
Hourly Flow Rate	e, HFR	32	700				429	36	
Percent Heavy Ve		3				•		~-	
Median Type/Sto: RT Channelized?	rage ·	Undiv	ided		•	/			
Lanes		0	1				1 0	i	•
Configuration		L:					TR		
Upstream Signal	>		No				No	•	•
pocicum bignar	•		. 110				140		
Minor Street: A	Approach	No	rthbound			So	uthbound		
	Movement	7	8	9	]	10	11 .	12	
•		L	${f T}$	R	İ	L	T	R .	
Volume					· _	19	0	14	
Peak Hour Factor	c, PHF					0.79	1.00	0.58	
Hourly Flow Rate						24	0	24	
Percent Heavy Ve						3	3	3	
Percent Grade (9			0				-10		
Flared Approach:	Exists?/	Storage			/			No	/
Lanes		_				0	1 0		
Configuration							LTR .		
				<del></del>					
<del></del>			igth, and			E Servi		<del></del>	
Approach	EB	WB	North				South		
Movement	1	4	7 8	}	9		10 1		12
Lane Config	LT	1				1	$\mathbf{L}$	TR	
v (vph)	32						4		
C(m) (vph)	1091						2	97	
v/c	0.03						0	.16	
95% queue length	0.09						0	.57	
O	0 4						-	^ •	

19.4

19.4

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С

Phone: E-Mail: Fax:

TWO-WAY STOP CONTROL (TWSC) ANALYSIS\_

Analyst:

Agency/Co.: McMILLEN ENGINEERING

Date Performed: 11/23/2005

Analysis Time Period: SATURDAY PEAK DEVELOPED

Intersection: SR40 / HAWES ROAD Jurisdiction: WHARTON TOWNSHIP

Units: U. S. Customary Analysis Year: 2006

Project ID: 2005-319

East/West Street: ROUTE 40
North/South Street: HAWES ROAD

Intersection Orientation: EW Study period (hrs): 0.25

	Vehicle	Volumes	and	Adjustmen	ts		
Major Street Movements	_ 1	2	3	4	5	6	
	L	T	R	L	T	R	
olume	25	588		<del></del>	361	21	<u></u>
Peak-Hour Factor, PHF	0.78	0.84			0.84	0.58	
Peak-15 Minute Volume	8	175			107	9	
Hourly Flow Rate, HFR.	32	700			429	36	
Percent Heavy Vehicles	3						
Median Type/Storage RT Channelized?	Und	ivided		/			
Lanes	0	1			1	0	
Configuration	]	JT			T	R	
Upstream Signal?		No			Ио		
Minor Street Movements	7	8	9	10	11	12	
	L	T	R	L	T	R	•
Volume				19	0	14	
Peak Hour Factor, PHF				0.79	1.00	0.58	
Peak-15 Minute Volume				6	0	6 .	
Hourly Flow Rate, HFR				24	0	24	
Percent Heavy Vehicles				3	3	3	
Percent Grade (%)		0			-10		
Flared Approach: Exists RT Channelized?	s?/Storaç	ge .		1		No	/
Lanes				0	1 (	)	
Configuration	•				LTR		
	<del></del>					<u> </u>	

Movements	Pedestrian 13	Volumes 14	and Ad 15	justments 16	 
Flow (ped/hr)		<del></del>	0	0	 

#### TWO-WAY STOP CONTROL SUMMARY

Analyst:

Agency/Co.: McMILLEN ENGINEERING

Date Performed: 11/23/2005

Analysis Time Period: WEEKDAY PM PEAK DEVELOPED.

Intersection:

SR40 / SEC. DRIVE

Jurisdiction: Wh

WHARTON TOWNSHIP

Units: U. S. Customary Analysis Year: 2006

Project ID: 2005-319

East/West Street:

ROUTE 40

North/South Street:

95% queue length

Control Delay

.pproach Delay

Approach LOS

°0\$

0.09

8.3

Α

SECONDARY DRIVEWAY

Intersection C	rientation:	EW		٠	Study	perio	d (hrs):	0.25	
·		icle Vol	umes and	l Adj	ustme:				<u>.</u>
Major Street:	Approach	Ea	stbound			We	stbound		
	Movement	1	2	3	- 1	4	5	6	
		L	T	R	1	L	T	R	
Volume	<del></del>	31	535.		<del></del>		386	15	<del></del>
Peak-Hour Fact	or, PHF	0.90	0.90				0.90	0.90	
Hourly Flow Ra	te, HFR	34	594				428	16	
Percent Heavy	Vehicles	3						<b></b>	
Median Type/St		Undiv	ided			/			
RT Channelized			•	•	•	,			
Lanes		0 ·	1				1 0	)	
Configuration		L	_				. TF		
Upstream Signa	1?	_	No				No	•	
							•		
Minor Street:	Approach	No	rthbound			So	uthbound	ì	
	Movement	7	8	9	.	10	11	12	
		L	${f T}$	R	1	· L	T	R	
Volume	<del></del>		<del></del>			14	. 0	28	
Peak Hour Fact	or PHF					0.90	0.90	0.90	
Hourly Flow Ra						15	0.50	31	
Percent Heavy						3	3	3	
Percent Grade			0			<b>J</b>	-8	3	
	•	/ D. da	_		,		_	NI -	,
Flared Approac	n: Exists?/	Storage			/	^		Мо	/
Lanes						0	1 0	•	
Configuration							LTR		•
						•			
			ngth, an			Serv:		<del></del>	
Approach	EB	WB	Nort					bound	_
Movement	1	4	7	8	9	1 :			.2
Lane Config	LT	J				J	L	TR	
/ (vph)	34				<del></del>		4	6	<del></del>
C(m) (vph)	1111						3	98	
//c	0.03							.12	
252									

0.39

15.2

С

15.2

С

Fax: Phone: E-Mail: TWO-WAY STOP CONTROL (TWSC) ANALYSIS Analyst: Agency/Co.: McMILLEN ENGINEERING Date Performed: 11/23/2005 Analysis Time Period: WEEKDAY PM PEAK DEVELOPED SR40 / SEC. DRIVE Intersection: Jurisdiction: WHARTON TOWNSHIP Units: U. S. Customary Analysis Year: 2006 Project ID: 2005-319 East/West Street: ROUTE 40 North/South Street: SECONDARY DRIVEWAY Study period (hrs): 0.25 Intersection Orientation: EW Vehicle Volumes and Adjustments 6 Major Street Movements 2 1 3 L Т R L Т R olume 386 15 31 535 Peak-Hour Factor, PHF 0.90 0.90 0.90 0.90 Peak-15 Minute Volume 9 149 107 4 Hourly Flow Rate, HFR 34 428 16 594 Percent Heavy Vehicles 3 Median Type/Storage Undivided RT Channelized? Lanes 1 0 Configuration LTTR Upstream Signal? No No Minor Street Movements 8 10 11 12 T R T R Ŀ L Volume 14 0 28 Peak Hour Factor, PHF 0.90 0.90 0.90 Peak-15 Minute Volume 4 0 8 Hourly Flow Rate, HFR 15 0 31 Percent Heavy Vehicles 3 3 3 Percent Grade (%) -8 Flared Approach: Exists?/Storage No RT Channelized? Lanes 0 1 0 Configuration LTRPedestrian Volumes and Adjustments Movements 1.3 14 15 16 ō Flow (ped/hr)

#### TWO-WAY STOP CONTROL SUMMARY

Analyst:

Agency/Co.: McMILLEN ENGINEERING

Date Performed: 11/23/2005

Analysis Time Period: SATURDAY PEAK DEVELOPED

Intersection: SR40 / SEC. DRIVE Jurisdiction: WHARTON TOWNSHIP

Units: U. S. Customary

Analysis Year: 2006

Project ID: 2005-319

East/West Street: ROUTE 40

North/South Street Intersection Ori	et: SECO	E 40 NDARY D EW	RIVEWAY	5	Studv	peri	od (hrs	): 0.	25	
					_	_	(	,		
Major Street: A	veni pproach		umes and stbound	Adji	is cme		estboun	<u>d</u>		
	lovement	1	2	3 .	1	4	5	6		
	io veinerre	L	T	R	1	L	T	R		
		-	_		•	_	_			
Volume		34	573				352	17		
Peak-Hour Factor		0.90	0.90				0.90	0.9	0	
Hourly Flow Rate		37	636				391	18		
Percent Heavy Ve		3		<del>-</del> -						
Median Type/Stor RT Channelized?	age	Undiv.	ided		,	<i>!</i>				
· Lanes		0	1				1	0		
Configuration		· L'	r .				• •	TR		
Upstream Signal?			No				No			
Minor Street: A	pproach	No:	rthbound			S	outhbou	nd		
	ovement	7	8 .	9	- 1	10	11	12		
		L	${f T}$	R	i	L	${f T}$	R		
Volume		-				15	0	30		
Peak Hour Factor	, PHF					0.90	0.90	0.90	0	
Hourly Flow Rate	, HFR					16	0	33		
Percent Heavy Ve	hicles					3	3	3		
Percent Grade (%	)		0				~8			
Flared Approach:	Exists?/	Storage			/			No	/	
Lanes						0	ĵ	0		
Configuration							LTR			
	Dolar O		ath an		·	- Cox				
Approach	Delay, Q: B	WB	ngch, and North			. Jer		hbound		<del></del>
Movement	1	4 1		3	9	1	10	11	12	
Lane Config	LT	- 1	,	,	,	i	10	LTR	42	
Barre Confrag	D1	'				ı		711		
v (vph)	37	•	<del></del>			·	···	49	<del></del>	
C(m) (vph)	1144							400		
v/c	0.03							0.12		
95% queue length	0.10							0.41		
Control Delay	8.3							15.3		
`0S	A							C		
.pproach Delay								15.3		
Approach LOS						•		С		

Phone: Fax: E-Mail: TWO-WAY STOP CONTROL (TWSC) ANALYSIS Analyst: Agency/Co.: MCMILLEN ENGINEERING Date Performed: 11/23/2005 Analysis Time Period: SATURDAY PEAK DEVELOPED Intersection: SR40 / SEC. DRIVE Jurisdiction: WHARTON TOWNSHIP Units: U. S. Customary Analysis Year: Project ID: 2005-319 East/West Street: ROUTE 40 North/South Street: SECONDARY DRIVEWAY Study period (hrs): 0.25 Intersection Orientation: EW Vehicle Volumes and Adjustments 6 Major Street Movements 2 3 1 L  $\mathbf{T}$ R R L 17 'olume 573 352 34 Peak-Hour Factor, PHF 0.90 0.90 0.90 0.90 Peak-15 Minute Volume 9 159 98 5 Hourly Flow Rate, HFR 37 636 391 18 Percent Heavy Vehicles 3 Median Type/Storage Undivided · RT Channelized? Lanes 1 0 Configuration LTTR Upstream Signal? No No 12 Minor Street Movements 8 10 11 T R L L T R Volume 30 15 0 Peak Hour Factor, PHF 0.90 0.90 0.90 Peak-15 Minute Volume 4 D 8 Hourly Flow Rate, HFR 16 0 33 Percent Heavy Vehicles 3 3 3 Percent Grade (%) -8 Flared Approach: Exists?/Storage No RT Channelized? Lanes 0 1 Configuration LTR Pedestrian Volumes and Adjustments Movements 13 14 15 16 0 Flow (ped/hr) 0

Analyst: RHH

Inter.: ROUTE 40/MAIN DRIVE

Agency: McMILLEN ENGINEERING

Area Type: All other areas

Date: 12/5/2005 Jurisd:

'eriod: WEEKDAY PM PEAK DEVELOPED Project ID: 2005-319

Year : 2006

Project I E/W St: F		-319		· N/5	S St: M	AIN D	RIVE/M	IARKER I	ROAD
			SIGNALIZE.	n tnireber	"CTTON :	AMMITS	RY		
	Eas	stbound T R	Westi	bound F R		thboui T			nbound   
No. Lanes	L	1 0 TR	1   L	1 0 TR	   0	LTR	_	0	1 1 LT R
Volume Lane Widt RTOR Vol	62 h  10.0 	490 8 11.0 2	6 3-  10.0 1:	42 47 1.0 12	•	10.0	10      3	42 0 12	56   2.0 16.0   14
Duration	0.25	Are	ea Type: A	ll other al Operat				<del></del>	
Phase Com	bination	1 2		4	.10113		6	7	8
EB Left Thru Right Peds	:	A I		NB   	Left Thru Right Peds	A A A			
WB Left Thru Right		A P		SB   	Left Thru Right	A A A			
Peds NB Right B Right				   EB   WB	Peds Right Right	10.0			
Green Yellow All Red		7.0 33 4.0 4. 2.0 2.				12.0 4.0 2.0	le Len	gth: 70	.0 secs
		Inter	section Pe	erformanc	e Summa		rc hen	9011. 70	
	ane roup	Adj Sa Flow Ra	it Rati		Lane (		App	roach	
Grp C	apacity	(s)	v/c	g/C	Delay	LOS	Dela	y LOS	•
Eastbound L	151	1511	0.46	0.10	21 0				
	775	1644	0.71	0.10 0.47	31.9 17.8	C B	19.3	В	
Westbound									
	159 805	1588 1707	0.04 0.52	0.10 0.47	28.6 13.6	C B	13.8	В	
Northboun	d								
LTR	241	1408	0.05	0.17	24.3	Ç	24.3	С	•
Southbound	d								
~	215 305	1256 1777	0.22 0.15		25.5 24.9	C C	25.2	С	
	Intersec	tion Del	ay = 17.8	(sec/ve	h) In	iterse	ction	Los =	В

Phone:

Fax:

E-Mail:

\_\_OPERATIONAL ANALYSIS\_

Analyst:

RHH

Agency/Co.:

McMILLEN ENGINEERING

Date Performed:

12/5/2005

Analysis Time Period:

WEEKDAY PM PEAK DEVELOPED
ROUTE 40/MAIN DRIVE

Intersection:

ROUTE 40/MAIN DRIVE

Area Type:

All other areas

Jurisdiction:

Analysis Year:

2006

Project ID: 2005-319

E/W St: ROUTE 40

N/S St: MAIN DRIVE/MARKER ROAD

#### VCLUME DATA

	l Ea	stbou	nd	We:	stbou:	nd	No:	rthbo	und	l So	uthbo	und
•	j. L	T	R	. L	${f T}$	R	L .	T	R	L	T	R
Volume	62	490	8	6	342	47	13	0	10	142	0	56
% Heavy Veh	13	3	3	13	3	3	3	3	3	13	3	3.
PHF	10.90	0.90	0.90	0.90	0.90	0.90	10.90	0.90	0.90	10.90	0.90	0.90
PK 15 Vol	17	136	2	12	95	13	11	0	3	12	0	16
.i Ln Vol	]						1			1		
% Grade	I	5		İ	-5		Ì	-5		Ì	0	
Ideal Sat	1800	1800		1800	1800	•	i .	1800		Ì	1800	1900
ParkExist	1.			Ì			j			1		
NumPark	I			ĺ			İ			ì		
No. Lanes	1 1	1	0	1 1	1	0 .	0	1	0	1 0	1	1
LGConfig	L	TR		L	TR	•		$\mathbf{L}\mathbf{T}\mathbf{I}$	3	ţ	LT	R
Lane Width	110.0	11.0		10.0	11.0		1	10.0	-	1	12.0	16.0
RTOR Vol			2	1		12			3	1		14
Adj Flow	169	551		7	419			11		l .	47	47
%InSharedLn	J			ĺ			1			1		
Prop LTs	ł	0.00	00	1	0.00	0.0	1	0.2	73	1	1.00	00
Prop RTs	0	.013		0.	.093		1 0.	727		1 0.	.000 1	1.000
Peds Bikes	0			0			0			1 0		
Buses	10	0		10	0		1	0			0	0
%InProtPhase	ã			1			1			1		
Duration	0.25		Area 1	Type:	A11 c	other	areas					

0.25 Area Type: All other areas

#### OPERATING PARAMETERS

	Ea	stbound	l We	stbound	t	Nort	hbound	l S	outhbo	und	- [
	L	T	R   L	T	R	L	r R	L	T	R	
	ł		I		1			I			į
Init Unmet	10.0	0.0	10.0	0.0		0	. 0		0.0	0.0	_
Arriv. Type	13	3	13	3		3		1	3	3	- 1
'nit Ext.	13.0	3.0	13.0	3.0	ļ	3	.0		3.0	3.0	1
. Factor	1	1.000	1	1.000	1	1	.000	1	1.00	0	-
Lost Time	12.0	2.0	12.0	2.0	1	2	. 0		2.0	2.0	1
Ext of g	12.0	2.0	12.0	2.0	1	2	. 0	ŀ	2.0	2.0	İ
Ped Min g		3.2	1	3.2	1	3	. 2	1	3.2		j

Analyst: RHH

Agency: McMILLEN ENGINEERING

12/5/2005 Date:

Date: 12/5/2005 Period: SATURDAY AM PEAK DEVELOPED

Project ID: 2005-319

Inter.: ROUTE 40/MAIN DRIVE

Area Type: All other areas

Jurisd:

Year : 2006

Project 1D: 20 E/W St: ROUTE			N/S	St: M	ATN DE	TVE/M	ARKER	ROAT	)	
D, W OC. ROUTE								1.011		
			D INTERSE					L 1- 1		
•	Eastbound		bound		thboun			thbou		
} · L	T R	] L	r R	L	Ţ.	R	L	T.	R	<i>}</i>
No. Lanes	1 1 0	1	1 0	i 0	1	0	0	1.	1	- <u>'</u>
LGConfig   L	TR	L	TR	1	LTR	1		$_{ m LT}$	R	1
Volume   68	443 3	5 30	05 · 51	14	0 5	1	45	0	60	1
Lane Width  10	.0 11.0	110.0 13	1.0	1	10.0	1		12.0	16.0	
RTOR Vol	1	1	13	1	. 1	. 1			15	1
Duration 0.	25 Area		ll other			· ·	<del></del> ,,			
Phase Combinat	ion 1 2	3	4	.10115	5	6	7	8	<del></del>	
EB Left	A	J	NB	Left	Ã	•	•	`		
Thru	А		)	Thru	A.					
Right	A		i	Right						
Peds			i 1	Peds	••					
WB Left	A.		SB	Left	· A					
Thru	A		1	Thru	A					
Right	A		1	Right						
Peds	••		j	Peds						
			1 170	Right						
NR Right			1 7.14							
_			EB							
JB Right	7.0 33.0		WB	Right	12 0					
Green	7.0 33.0 4.0 4.0				12.0 4.0					
JB Right Green Yellow	4.0 4.0				4.0					
JB Right Green Yellow					4.0	e Len	gth: 1	70.0	se	cs
JB Right Green Yellow All Red	4.0 4.0 2.0 2.0 Interse	ction Pe	WB	Right e Summa	4.0 2.0 Cýcl ary			70.0	se	cs
JB Right Green Yellow All Red Appr/ Lane	4.0 4.0 2.0 2.0 Interse Adj Sat	ction Pe Rati	WB	Right e Summa	4.0 2.0 Cýcl ary			70.0	se	cs
JB Right Green Yellow All Red Appr/ Lane Lane Group	4.0 4.0 2.0 2.0 Interse Adj Sat Flow Rate	ction Pe Rati	WB	Right e Summa	4.0 2.0 Cýcl ary Group	App		70.0	se	cs
JB Right Green Yellow All Red Appr/ Lane Lane Group	4.0 4.0 2.0 2.0 Interse Adj Sat Flow Rate	ction Pe Rati	WB	Right e Summa Lane (	4.0 2.0 Cýcl ary Group	App	roach	70.0	se	cs
JB Right Green Yellow All Red Appr/ Lane Lane Group Grp Capaci	4.0 4.0 2.0 2.0 Interse Adj Sat Flow Rate	ction Pe Rati	WB	Right e Summa Lane (	4.0 2.0 Cýcl ary Group	App	roach	70.0	se	cs
JB Right Green Yellow All Red Appr/ Lane Lane Group Grp Capaci Eastbound L 151	4.0 4.0 2.0 2.0 Interse Adj Sat Flow Rate ty (s)	ction Pe Rati v/c	WB erformanc los g/C	Right  e Summa  Lane (	4.0 2.0 Cycl ary Group	App	roach	70.0	se	cs
GB Right Green Yellow All Red  Appr/ Lane Lane Group Grp Capaci Eastbound L 151 FR 776	4.0 4.0 2.0 2.0 Interse Adj Sat Flow Rate ty (s)	ction Pe Rati v/c	erformancios  g/C  0.10	e Summa Lane ( Delay	4.0 2.0 Cycl ary Group LOS	App	roach y LOS	70.0	se	cs
GB Right Green Yellow All Red  Appr/ Lane Lane Group Grp Capaci Eastbound L 151 TR 776  Westbound	4.0 4.0 2.0 2.0 Interse Adj Sat Flow Rate ty (s) 1511 1646	v/c  0.50 0.64	g/C  0.10 0.47	e Summa Lane ( Delay 32.5 15.7	4.0 2.0 Cyclary Group LOS	App	roach y LOS	70.0	se	cs
JB Right Green Yellow All Red  Appr/ Lane Lane Group Grp Capaci Eastbound L 151 TR 776 Westbound L 159	4.0 4.0 2.0 2.0 Interse Adj Sat Flow Rate ty (s) 1511 1646	0.50 0.64	g/C  0.10 0.47	e Summa Lane ( Delay  32.5 15.7	4.0 2.0 Cyclary Group LOS	App	roach y LOS B	70.0	se	cs
GB Right Green Yellow All Red  Appr/ Lane Lane Group Grp Capaci Eastbound L 151 TR 776 Westbound L 159 TR 803	4.0 4.0 2.0 2.0 Interse Adj Sat Flow Rate ty (s) 1511 1646	0.50 0.64	g/C  0.10 0.47	e Summa Lane ( Delay 32.5 15.7	4.0 2.0 Cyclary Group LOS	Appropriate Approp	roach y LOS B	70.0	se	cs
GB Right Green Yellow All Red  Appr/ Lane Lane Group Grp Capaci Eastbound L 151 TR 776 Westbound L 159 TR 803 Northbound	4.0 4.0 2.0 2.0 Interse Adj Sat Flow Rate ty (s) 1511 1646 1588 1703	v/c  0.50 0.64  0.04 0.47	g/C 0.10 0.47	e Summa Lane (Delay 32.5 15.7 28.6 13.0	4.0 2.0 Cyclary Group LOS C B	Appr Delay	roach y LOS B	70.0	se	cs
GB Right Green Yellow All Red  Appr/ Lane Lane Group Grp Capaci Eastbound L 151 FR 776 Westbound L 159 FR 803 Northbound	4.0 4.0 2.0 2.0 Interse Adj Sat Flow Rate ty (s) 1511 1646	0.50 0.64	g/C  0.10 0.47	e Summa Lane (Delay 32.5 15.7 28.6 13.0	4.0 2.0 Cyclary Group LOS C B	Appr Delay	roach y LOS B	70.0	se	cs
GB Right Green Yellow All Red  Appr/ Lane Lane Group Grp Capaci Eastbound L 151 TR 776 Westbound L 159 TR 803 Northbound	4.0 4.0 2.0 2.0 Interse Adj Sat Flow Rate ty (s) 1511 1646 1588 1703	v/c  0.50 0.64  0.04 0.47	g/C 0.10 0.47	e Summa Lane (Delay 32.5 15.7 28.6 13.0	4.0 2.0 Cyclary Group LOS C B	Appr Delay	roach y LOS B	70.0	se	cs
GB Right Green Yellow All Red  Appr/ Lane Lane Group Grp Capaci Eastbound L 151 TR 776 Westbound L 159 TR 803 Northbound LTR 236 Southbound	4.0 4.0 2.0 2.0 Interse Adj Sat Flow Rate ty (s) 1511 1646 1588 1703	0.50 0.64 0.04 0.03	g/C  0.10 0.47  0.10 0.47	Right  e Summa Lane (  Delay  32.5 15.7  28.6 13.0	4.0 2.0 Cyclary Group LOS C B C	Appr Delay 18.0 13.3	roach y LOS B	70.0	se	CS
JB Right Green Yellow All Red  Appr/ Lane Lane Group Grp Capaci  Eastbound L 151 TR 776  Westbound L 159 TR 803  Northbound LTR 236	4.0 4.0 2.0 2.0 Interse Adj Sat Flow Rate ty (s) 1511 1646 1588 1703	0.50 0.64 0.04 0.03	g/C 0.10 0.47	e Summa Lane (Delay 32.5 15.7 28.6 13.0	4.0 2.0 Cyclary Group LOS C B C	Appr Delay	roach y LOS B	70.0	se	CS

Phone:

Fax:

E-Mail:

OPERATIONAL ANALYSIS

Analyst:

RHH

Agency/Co.:

MCMILLEN ENGINEERING

Date Performed:

12/5/2005

Analysis Time Period:

SATURDAY AM PEAK DEVELOPED ROUTE 40/MAIN DRIVE

Intersection: Area Type:

All other areas

Jurisdiction: Analysis Year:

2006

Project ID: 2005-319

E/W St: ROUTE 40

N/S St: MAIN DRIVE/MARKER ROAD

#### VOLUME DATA\_\_\_\_

-					•							
	Ea:	stbou	nd	We:	stbou	nd	I No:	rthbo	und	I So	ıthboı	und
	L	T	R	L	${f T}$	R	L	T	R	L	T	R
	1						1			!		
Volume	168	443	3	15	305	51	4	0	5	145	0	60
% Heavy Veh	13	3	3	13	3	3	13	3	3	3	3	3
-	10.90	0.90	0.90	10.90	0.90	0.90	10.90	0.90	0.90	10.90	0.90	0.90
PK 15 Vol	119	123	1	2	85	14	11	0	2	113	0	17
ii Ln Vol	1			i			İ			i		
% Grade	ĺ	5		İ	-5		Í	<b>-</b> 5		i	0	
Ideal Sat	1800	1800		1800	1800		i	1800		i	1800	1900
ParkExist	ĺ			1			1			i i		
NumPark	1			İ	•		j			ĺ		
No. Lanes	1	<u>1</u>	0	i 1	1	0	i o	1	0	i o	1	1
LGConfi'g	L	TR		Ĺ	TR		i	LTI	3.	i	$\mathbf{L}\mathbf{T}$	R
Lane Width	10.0		•	1.10.0	11.0		Ì	10.0		ĺ	12.0	16.0
RTOR Vol	İ		1	i		13	j		1	ĺ		15
Adj Flow	76	494		j 6	381		i	8		i	50	50
%InSharedLn	İ			i			i			i .		
Prop LTs	i	0.00	00	i	0.00	00	i	0.50	00	İ	1.00	00
Prop RTs	i oʻ.	004		io.	110		i 0.	.500		i o.	000	
Peds Bikes	0 1			i o			i o			i o		
Buses	0	0		0	0		i	0		İ	0	0
%InProtPhase	e e			Ì			1			i	•	
Duration	0.25		Area '	Type:	All d	ther	areas			•		

0.25 Area Type: All other areas

#### OPERATING PARAMETERS

	Ea	stbound	/ We	stbound	1	Northbound	5	outhbound	ł
	L -	T R	L	T F	२   ]	L T R	L	T R	-
			!						I
Init Unmet	10.0	0.0	10.0	0.0	·	0.0	1	$0.\overline{0} - 0.0$	-
Arriv. Type	∍ 3	3	3	3	1	3	!	3 3	- 1
'nit Ext.	13.0	3.0	[3.0	3.0	- 1	3.0	1	3.0 3.0	- [
_ Factor	1	1.000	1	1.000	1	1.000	1	1.000	1
Lost Time	12.0	2.0	12.0	2.0	Į.	2.0	1	2.0 2.0	1
Ext of g	12.0	2.0	12.0	2.0	1	2.0	1	2.0 2.0	- 1
Ped Min g	ļ	3.2	!	3.2	1	3.2	i	3.2	1

#### TWO-WAY STOP CONTROL SUMMARY

Analyst: ·

gency/Co.: McMILLEN ENGINEERING

Date Performed: 11/23/2005

Analysis Time Period: WEEKDAY PM PEAK DEVELOPED

Intersection: SR40 / SMITH SCHOOL Jurisdiction: WHARTON TOWNSHIP

Units: U. S. Customary

Analysis Year: 2006

Project ID: 2005-319

East/West Street: ROUTE 40

North/South Street: SMITH SCHOOL HOUSE RD

North/South Stree Intersection Orie		TH SCHOO	L HOUSE		Study	peri	od (hrs	): 0.2	25
	Veh:	icle Vol	ımes an	d Adju	stme	nts			
Major Street: Ap	proach		stbound	_			estboun	d	
-	vement	1	2 ·	3	1	4	5	6	
	,	L L	T	R	i	ŗ. ľ	T	R	
T7 = 3		2.6	<u> </u>				206		
Volume		16	554				396	8	7
Peak-Hour Factor,		0.67	0.94				0.94		<i>'</i>
Hourly Flow Rate,		23	589				421	11	
Percent Heavy Veh		3	<del>-</del> -						
Median Type/Stora RT Channelized?	ge:	Undiv:	ıded			/			
Lanes		0	1			-	1	0	
Configuration		L	ŗ.					TR	
Upstream Signal?			No		-		No		
Minor Street: Ap	proach		thbound				outhbou		
Mo	vement	7	8	9	1	10	11	12	
		L	Т	R	I	L	${f T}$	R	
Volume						12	0	26	
Peak Hour Factor,	PHF					0.75	0.90	0.93	3
Hourly Flow Rate,						16	0	27	
Percent Heavy Veh						3	3	3	
Percent Grade (%)			0			_	10	•	
Flared Approach:	Exists?/	'Storage	•		1			No	1
Lanes	E112000.7	Diorage			,	0	1	0	,
Configuration						Ü	LTR	v	
Comingulation							J.I.		
							_ 1-11	•	
7	_Delay, Ç					f Serv			<u> </u>
Approach	E3	WB		hboun		1	10	thbound	12
Movement	1	4	7	8	9		TO	11	12
Lane Config	$_{ m LT}$	I				ı		LTR	
v (vph)	23			<u> </u>				43	
C(m) (vph)	1122							392	
v/c	0.02							0.11	
95% queue length	0.06							0.37	
Control Delay	8.3							15.3	
`OS	A							C	
.pproach Delay								15.3	
Approach LOS								C	
								~	

Phone: E-Mail: Fax:

TWO-WAY STOP CONTROL (TWSC) ANALYSIS\_

Analyst:

Agency/Co.: McMILLEN ENGINEERING

Date Performed: 11/23/2005

Analysis Time Period: WEEKDAY PM PEAK DEVELOPED

Intersection: SR40 / SMITH SCHOOL Jurisdiction: WHARTON TOWNSHIP

Units: U. S. Customary

Analysis Year: 2006

Project ID: 2005-319

East/West Street: ROUTE 40

North/South Street: SMITH SCHOOL HOUSE RD

Intersection Orientation: EW Study period (hrs): 0.25

·	Vehicle	Volumes	and	Adjustmen	ts		
Major Street Movements	1	2	3	4	5	6.	
•	L	Т	R	L	T	R	
olume	16	554		<del>_</del>	396	, 8	
Peak-Hour Factor, PHF	0.67	0.94			0.94	0.67	
Peak-15 Minute Volume	6	147			105	3	
Hourly Flow Rate, HFR	23	· 589			421	11	
Percent Heavy Vehicles	3						•
Median Type/Storage RT Channelized?	Undi	lvided		/			
Lanes	0	1			1	0	
Configuration	I	T			T	R	
Upstream Signal?		No			No		
Minor Street Movements	7	8	9	10	11	12	
•	${f L}$	T	R	${f L}$	T	R	
Volume				12	0	26	·
Peak Hour Factor, PHF				0.75	0.90	0.93	
Peak-15 Minute Volume				4	0	7	
Hourly Flow Rate, HFR				16	0	27	
Percent Heavy Vehicles				3	3	3	
Percent Grade (%)		0			10		
Flared Approach: Exists RT Channelized?	s?/Storag	e		/		No	/
Lanes				0	1	0	
Configuration					LTR		
					<del></del>		

	Pedestrian	Volumes	and Ad	justments_	 
Movements	1.3	14	15	16	
Flow (ped/hr)	0	0	0	0	 

#### TWO-WAY STOP CONTROL SUMMARY

Analyst:

.gency/Co.: McMILLEN ENGINEERING

Date Performed: 11/23/2005

Analysis Time Period: SATURDAY PEAK DEVELOPED Intersection: SR40 / SMITH SCHOOL

Jurisdiction: WHARTON TOWNSHIP

Flared Approach: Exists?/Storage

Lanes

Configuration

Units: U. S. Customary

Analysis Year: 2006

Project ID: 2005-319

East/West Street: ROUTE 40

North/South Street: SMITH SCHOOL HOUSE RD

Intersection (	Orientation:	EW		\$	Study	perio	d (hrs)	: 0.25
	Veh	icle Vol	umes ar	nd Adjı	ıstme	nts.		
Major Street:	Approach		stbound	_	-		stbound	
,	Movement	1	2	3	F	4	5	6
		L	T	R	I	L	T	R
Volume		14	523	,	<u></u>	<del></del> -	446	10
Peak-Hour Fact	or, PHF	0.50	0.87				0.87	0.50
Hourly Flow Ra	ate, HFR	28	601				512	20
Percent Heavy	Vehicles	3						<del>-</del> -
Median Type/St RT Channelized	-	Undiv	ided			/		
Lanes		0	1				1 (	0
Configuration		L	T				T	R
Upstream Signa	11?		No				No	
Minor Street:	Approach	No	rthboun	ıd		So	uthbound	i
	Movement	7	8	9		10	11	12
		F .	· T .	R	.1	L	T	R
Volume	· · · · · · · · · · · · · · · · · · ·	<u>-</u>				8	0	12
Peak Hour Fact	or, PHF					0.40	0.90	0.60
Hourly Flow Ra	ite, HFR					19	0	19
Percent Heavy						3	3	3
Percent Grade			0				10	

7			Le	ngt	h, and Le		Ser			
Approach	EB	WB			Northbou	na		50	outhboun	
Movement	1	4	1	7	8	9		10	11	12
Lane Config	$_{ m LT}$		1			•	- 1		LTR.	
v (vph)	28	<u> </u>			<del></del>			<del></del>	38	
C(m) (vph)	1030								296	
v/c	0.03								0.13	
95% queue length	0.08								0.44	
Control Delay	8.6								18.9	
10S	Λ								C	
.pproach Delay									18.9	
Approach LOS									С	

No

1

LTR

· Phone: Fax: E-Mail: TWO-WAY STOP CONTROL (TWSC) ANALYSIS Analyst: Agency/Co.: McMILLEN ENGINEERING Date Performed: 11/23/2005 Analysis Time Period: SATURDAY PEAK DEVELOPED Intersection: SR40 / SMITH SCHOOL Jurisdiction: WHARTON TOWNSHIP Units: U. S. Customary Analysis Year: 2006 Project ID: 2005-319 ROUTE 40 East/West Street: North/South Street: SMITH SCHOOL HOUSE RD Study period (hrs): 0.25 Intersection Orientation: EW Vehicle Volumes and Adjustments Major Street Movements 6 1 2 3  $\mathbf{L}$ Т Ŕ  $\mathbf{L}$ T R olume 14 523 446 10 0.50 0.87 0.50 Peak-Hour Factor, PHF 0.87 7 128 5 Peak-15 Minute Volume 150 Hourly Flow Rate, HFR 28 601 512 20 Percent Heavy Vehicles Median Type/Storage Undivided RT Channelized? Lanes 0 1 Configuration LT TR Upstream Signal? No No Minor Street Movements 9 10 12 8 11 R L T L T R Volume 8 ō 12 Peak Hour Factor, PHF 0.40  $0.90^{\circ}$ 0.60 Peak-15 Minute Volume 5 0 Hourly Flow Rate, HFR 19 0 19 Percent Heavy Vehicles 3 3 3 Percent Grade (%) 10 Flared Approach: Exists?/Storage No RT Channelized? Lanes 1 Configuration LTR Pedestrian Volumes and Adjustments Movements 13 14 15 16 Flow (ped/hr)

#### TWO-WAY STOP CONTROL SUMMARY

Analyst:

.gency/Co.: - McMILLEN ENGINEERING

Date Performed: 11/23/2005

Analysis Time Period: WEEKDAY PM PEAK DEVELOPED Intersection: SR40 / DINNER BELL RD

Jurisdiction: WHARTON TOWNSHIP

Units: U. S. Customary

Analysis Year: 2006

Project ID: 2005-319

East/West Street: ROUTE 40

North/South Street: DINNER BELL ROAD

Intersection Ori	· St	tudy	period	(hrs	): 0.2	25			
	Veh.	icle Vol	umes and	d Adjus	stmer	nts			
Major Street: A	pproach		stbound				tbound	<u>d</u>	
	lovement	1	2	3	1	4	5	6	
		L	$ar{ extbf{T}}$	R	i	L	${f T}$	R	
				_					
Volume		26	504	47		14	362	38	
Peak-Hour Factor		0.81	0.94	0.78		0.58	0.94	0.79	€
Hourly Flow Rate	, HFR	. 32	536	60		24	385	48	
Percent Heavy Ve	hicles	3	<del>-</del> -			3			
Median Type/Stor	age	Undiv.	ided		,	/			
RT Channelized?	J								
Lanes	•	0	i o	),		Ō	1	0	•
Configuration		L'	rr			$_{ m LT}$	R		
Upstream Signal?			No				No		
<b>J</b>									
Minor Street: A	pproach	· No:	rthbound	i		Sou	thbour	nd	
M	ovement	7	8	9	}	10	11.	12	
		L	T	R	1	L	T	R	
Volume		26	7	16		36	3	15	
Peak Hour Factor		0.81	0.58	0.67		0.75	0.38	0.63	3
Hourly Flow Rate		32	12	23		48	7	23	
Percent Heavy Ve	hicles	3	3	3		3 .	3	3	
Percent Grade (%	)		-4				3		
Flared Approach:	Exists?/	/Storage		No	/			No	/
Lanes		0.	1 0	}		0	1	0	
Configuration			LTR				LTR		
******									
	_ , ,	_							
Annuarah		Queue Ler				: Servi		<u> </u>	
Approach	EB	WB		hbounc				thbound	
Movement	1	4		8	9	[ 1	U	11	12
Lane Config	LTR	LTR		LTR		1		LTR	
v (vph)	32	24	<del> </del>	67				78	
C(m) (vph)	1121	976		225				210	
V/C	0.03	0.02		0.30		•		0.37	
95% queue length	0.03	0.02		1.20				1.61	
	8.3	8.8		27.6				31.9	
Control Delay									
TOS	A	Α		D OB C				D	
pproach Delay				27.6				31.9	
Approach LOS				D				Ð	

Phone: E-Mail: Fax:

TWO-WAY STOP CONTROL (TWSC) ANALYSIS\_

Analyst:

Agency/Co.: McMILLEN ENGINEERING

Date Performed: 11/23/2005

Analysis Time Period: WEEKDAY PM PEAK DEVELOPED Intersection: SR40 / DINNER BELL RD

Jurisdiction:

WHARTON TOWNSHIP

Units: U. S. Customary

Analysis Year: 2006

Project ID: 2005-319

East/West Street: ROUTE 40

North/South Street: DINNER BELL ROAD

Intersection Orientation: EW Study period (hrs): 0.25

·	Vehicle	Volumes	and Ad	justmen	ts,			
Major Street Movements	_ 1	2	3	4	5	6		
	Ľ	T	R	L	T	R		
Jolume	26	504	47	14	362	38		
Peak-Hour Factor, PHF	0.81	0.94	0.78	0.58	0.94	0.79		
Peak-15 Minute Volume	8	134	15	6	96	12	,	
Hourly Flow Rate, HFR	32	536	60	24	385	48		
Percent Heavy Vehicles	3	,		3				
Median Type/Storage	Undi	vided		1				
RT Channelized?		-		•				
Lanes	0	1	0 .	0	1	0		
Configuration	L'	rR		L'	rR			
Upstream Signal?		No			No			
·		<del></del>		<del></del> ~			<u> </u>	·
Minor Street Movements	7	8	9	10	11	12		
	L	T	R	${f L}$	T	R		
Volume	26	7	16	36	3	15		
Peak Hour Factor, PHF	0.81	0.58	0.67	0.75	0.38	0.63		
Peak-15 Minute Volume	8	3	6	12	2	6		
Hourly Flow Rate, HFR	32	12	23	48	7	23		
Percent Heavy Vehicles	3	3	3	3	3	3		
Percent Grade (%)		-4			3			
Flared Approach: Exist	s?/Storage	<u>۽</u>	No	1		No	1	
RT Channelized?			- •	•		· · · <del>-</del>	•	
Lanes	0	1	0	0	1	0		
Configuration	_	LTR	_	_	LTR	_		

Movements	_Pedestrian 13	Volumes 14	and Ad	justments_ 16	
Flow (ped/hr)	0	0	0	0	

#### TWO-WAY STOP CONTROL SUMMARY

Analyst:

.gency/Co.: McMILLEN ENGINEERING

Date Performed: 11/23/2005

Analysis Time Period: SATURDAY PEAK DEVELOPED Intersection: SR40 / DINNER BELL RD

Jurisdiction: WHARTON TOWNSHIP

Units: U. S. Customary

Analysis Year: 2006

Project ID: 2005-319

East/West Street: ROUTE 40

North/South Street: DINNER BELL ROAD

Intersection Orientation: EW Study period (hrs): 0.25

<del></del>		le Volu		ł Adjus	tme		_			
Major Street: Ap	proach	Eas	tbound			Wes	tbound			
· Mo	vement	1	2	3	i	4	5	6		
		L	T	R	İ	L	T	R		
Volume		19	484	28		9	326	15		
Peak-Hour Factor,	PHF	0.75	0.87	0.63		0.68	0.87	0.70		
Hourly Flow Rate,	HFR	25	556	44		13	374	21		
Percent Heavy Veh	icles	3				3				
Median Type/Stora RT Channelized?	ge	Undivi	ded			/				
Lanes	٠.	.0	1 (	ì		0	1 0			
Configuration		LT		•		LT				
Upstream Signal?			No			11.	No			
poczedni orginar.							140			
Minor Street: Ap	proach	Nor	chbound		-	Sou	thbound			
Мо	vement	7	8	9		10	11	12		
		L	T	R	1	L	T	R·		
Volume		54	2	15		16	3	15		
Peak Hour Factor,	PHF	0.84	0.50	0.42		0.50	0.75	0.62		
Hourly Flow Rate,	HFR	64	4	35		32	4	24		
Percent Heavy Veh:	icles	3	3	3		3	3	3		
Percent Grade (%)			-4				3			
Flared Approach:	Exists?/St	orage		Ио	/			No	/	
Lanes		Ō	1 0			0	1 0			
Configuration			LTR				LTR			

Approach	EB	Queue I WB	-	North				S	outhbour	nd
Movement	1	4	7	8		9	j	10	11	12
Lane Config	LTR	LTR		L	TR		J		LTR	
v (vph)	25	13		1	03			<del></del>	60	
C(m) (vph)	1158	972		2	40				255	
v/c	0.02	0.01		0	.43				0.24	
95% queue length	0.07	0.04		2	.02				0.89	
Control Delay	8.2	8.8		3	8.0				23.4	
-os	A	Α			ָ <u></u>				С	
.pproach Delay				3	0.8				23.4	
Approach LOS					<b>O</b>				С	

Phone: E-Mail:

TWO-WAY STOP CONTROL (TWSC) ANALYSIS

Analyst:

Agency/Co.:

McMILLEN ENGINEERING

Date Performed:

11/23/2005

Analysis Time Period: SATURDAY PEAK DEVELOPED

SR40 / DINNER BELL RD

Intersection:

Jurisdiction:

WHARTON TOWNSHIP

Units: U. S. Customary

Analysis Year:

2006

Project ID: 2005-319 East/West Street:

ROUTE 40

North/South Street:

DINNER BELL ROAD

Intersection Orientation: EW

Study period (hrs): 0.25

	Vehicle	Volume	s and Ad	justmen	ts		
Major Street Movements	1	2	· 3	4	5	6	
	L	T	R	L	T	R·	
Jolume	19	484	28	9	326	15	
Peak-Hour Factor, PHF	0.75	0.87	0.63	0.68	0.87	0.70	
Peak-15 Minute Volume	6	139	11	3	94	5 <sup>.</sup>	
Hourly Flow Rate, HFR	25	556	44	13	374	21	
Percent Heavy Vehicles	3			3			
Median Type/Storage	Undi	vided		1			
RT Channelized?			•	,			
Lanes	0	1	Ó	0	1	0	
Configuration	L'	r.	-	L'	r'R	~	
Upstream Signal?		No ·		_	No		
Minor Street Movements	7	8	9	10	11	12	
· .	L	Т	R	<b>L</b>	$\mathbf{T}$	R	
Volume	54	2	15	16	3	15	
Peak Hour Factor, PHF	0.84	0.50	0.42	0.50	0.75	0.62	
Peak-15 Minute Volume	16	1	9	8	1	6	
Hourly Flow Rate, HFR	64	4.	35	32	4	24	
Percent Heavy Vehicles	3	3	3	3	3	3	
Percent Grade (%)	-	-4	_	-	3	_	
Flared Approach: Exists	:?/Storage	<u>.</u>	No	1	-	No	/
RT Channelized?	,			,		-·-	,
Lanes	0	1	0	0	1	0	
Configuration	_	LTR		_	LTR	_	

	Pedestrian	Volumes	and Ad	justments		
Movements	13	14	15	16		
Flow (ped/hr)	0	0	0	0	 	· · · · · · · · · · · · · · · · · · ·

## APPENDIX 3

# CAPACITY ANALYSIS (2016 BASE CONDITIONS)

#### TWO-WAY STOP CONTROL SUMMARY\_

Analyst:

TR

igency/Co.:

McMillen Engineering

Date Performed:

10/9/2005

Analysis Time Period: Weekday PM Base Intersection:

Route 40/ SR 381 S

Jurisdiction:

Units: U. S. Customary Analysis Year: 2016

Project ID: Route 40 and SR 381 S East/West Street: Route 40

North/South Street:

SR 381 S

Intersection Orientation: EW

Study period (hrs): 0.25

	. Ve	hicle Vol	umes an	d Adjus	stme	nts				
Major Street:	Approach		stbound				stbound	1		
	Movement	1	2	3	- 1	4	5	6		
		L	T	R	İ	L	$\mathbf{T}_{\perp}$	R	•	
Volume			559	59		57	568			<del></del>
Peak-Hour Facto	r. PHF		0.92	0.75		0.72				
Hourly Flow Rat			607	78		79	624			
Percent Heavy V						3	- <b>-</b>			
Median Type/Sto RT Channelized?		Undiv	ided			/				
Lanes			1	0		0	1			
Configuration				R ·		_	T			
Tpstream Signal	2		No	IX.		1	МО			
ipscream signar	:		NO .	•			NO			
	Approach	Мо	rthboun				uthbour	id		
	Movement	7	8	9	- 1	10	11	12		
•		${f L}$	T	R	1	L	T	R		
Volume		56	0	62						
Peak Hour Facto	r. PHF	0.71	0.50	1.00						
Hourly Flow Rate		78	0	62						
Percent Heavy V		3	3	3						
Percent Grade (		J	7	J			3.			
Flared Approach	•	?/Storage		No	. ,				1	
Lanes		0		0	•	•			•	
Configuration		Ť	ĻTR							
					·					
	Delay,	Queue Le				f Serv			·	
Approach	EB	WB		thbound	[			hboun		
Movement	1	4	7	8	9	1	10	11	12	•
Lane Config		LT		LTR		1				
v (vph)	<del></del>	<del>-</del> - <del>7</del> 9		140			<del></del>	<del></del>		
C(m) (vph)		904		196						
v/c		0.09		0.71						
95% queue length	1	0.29		4.55						
Control Delay		9.4		59.3						
OS		A		F						
Approach Delay				59.3						
Approach LOS				F						
•										

Phone: Fax: E-Mail: TWO-WAY STOP CONTROL(TWSC) ANALYSIS Analyst: TR Agency/Co:: McMillen Engineering Date Performed: 10/9/2005 Analysis Time Period: Weekday PM Base Intersection: Route 40/ SR 381 S Jurisdiction: -Units: U. S. Customary 2016 Analysis Year: Project ID: Route 40 and SR 381 S. East/West Street: Route 40 North/South Street: SR 381 S Intersection Orientation: EW Study period (hrs): 0.25 Vehicle Volumes and Adjustments Major Street Movements 1 2 3 6 Т R L Т R 559 59 57 568 /olume Peak-Hour Factor, PHF 0.92 0.75 0.72 0.91 20 Peak-15 Minute Volume 152 20 156 Hourly Flow Rate, HFR 607 78 79 624 Percent Heavy Vehicles 3 Median Type/Storage Undivided RT Channelized? Lanes 1 0 1 Configuration TRLTUpstream Signal? No No Minor Street Movements 8 9 10 11 12 Т Т  $\mathbf{L}$ R Ļ R Volume 56 0 62 Peak Hour Factor, PHF 0.71 0.50 1.00 Peak-15 Minute Volume 20 0 16 Hourly Flow Rate, HFR 78 0 62 Percent Heavy Vehicles 3 3 3 Percent Grade (%) 3 Flared Approach: Exists?/Storage No RT Channelized? Lanes 1 Configuration LTR Pedestrian Volumes and Adjustments

13

Ô

14

0

15

16

Movements

Flow (ped/hr)

#### TWO-WAY STOP CONTROL SUMMARY

Analyst: TR

Agency/Co.: McMillen Engineering

Date Performed: 10/9/2005

Analysis Time Period: Saturday PeakBase Intersection: Route 40/ SR 381 S

Jurisdiction:

Units: U. S. Customary

Analysis Year: 2016

Project ID: Route 40 and SR 381 S
East/West Street: Route 40
North/South Street: SR 381 S

Intersection Orientation: EW

Study period (hrs): 0.25

Major Street:	Approach	$\Xi_{i}$	astbound	-		Wes	stbound		
_	Movement	1	2	3	ı	4	5	<sub>.</sub> 6	
•		L	T	R	}	L	Т.	R	
Volume			637	52		58	437	<del></del> -	
Peak-Hour Fact	or, PHF		. 0.84	0.65		0.74	0.84		
Hourly Flow Ra	te, HFR		758	80		78	520		
Percent Heavy	Vehicles		·			3			
Median Type/St	orage	Undi	vided			1			
RT Channelized	-	•							
Lanes			1 (	)		0	1		
Configuration			TI	₹		$\Gamma_{i}$	r		
Opstream Signa	1?		No				No		
Miror Stroot:	Annroach		arthbour				ıt hhound		

Minor Street:	Approach	Noi	cthboun	d					
	Movement	7	8	9	1	10	11	12	
•	•	L	T	R ·	i	L	T	R	
Volume		34	0	76					
Peak Hour Fact	or, PHF	0.86	0.50	0.78					
Hourly Flow Ra	te, HFR	39	0	97					
Percent Heavy	Vehicles	3	3	3					
Percent Grade	(%)		7				3		
Flared Approac	h: Exists?/	Storage	•	No	/	•			/
Lanes Configuration		Ő	1 LTR	0			•		

Approach	EB	WB			Northboun	d		ร	outhbou	nd
Movement	1	4	1	7	8	9	1	10	11	12
Lane Config		LT	I		LTR		1			
v (vph)		78			136					
C(m) (vph)		792			240					
v/c		0.1	0		0.57					
95% queue length		0.3	3		3.16					
Control Delay		10.	0+		38.0					
os		В			E.					
Approach Delav					38.0					
Approach LOS					£					

Phone: Fax: E-Mail: TWO-WAY STOP CONTROL (TWSC) ANALYSIS Analyst: TR McMillen Engineering Agency/Co.: Date Performed: 10/9/2005 Analysis Time Period: Saturday PeakBase Intersection: Route 40/ SR 381 S Jurisdiction: Units: U. S. Customary 2016 Analysis Year: Project ID: Route 40 and SR 381 S East/West Street: Route 40 North/South Street: SR 381 S Intersection Orientation: EW Study period (hrs): 0.25 Vehicle Volumes and Adjustments Major Street Movements 1 3 6 2 T R  $\mathbf{L}$ Т R L **Volume** 637 52 58 437 Peak-Hour Factor, PHF 0.84 0.65 0.74 0.84 20 Peak-15 Minute Volume 190 2.0 130 Hourly Flow Rate, HFR 758 78 520 Percent Heavy Vehicles --3 Median Type/Storage Undivided RT Channelized? 0 1 Lanes 0 1 Configuration TR LT Upstream Signal? No No Minor Street Movements 8 9 10  $\overline{11}$ 12 L T R Ŀ T R Volume 76 34 0 Peak Hour Factor, PHF 0.86 0.50 0.78 Peak-15 Minute Volume 10 0 24 Hourly Flow Rate, HFR 39 0 97 Percent Heavy Vehicles 3 3 3 Percent Grade (%) Flared Approach: Exists?/Storage No RT Channelized? Lanes 1 Configuration LTR Pedestrian Volumes and Adjustments Movements 13 14 15 16

Ō.

0

0

Flow (ped/hr)

#### TWO-WAY STOP CONTROL SUMMARY

`nalyst: TR

Agency/Co.: McMillen Engineering

Date Performed: 10/9/2005

Analysis Time Period: Weekday PM Base Intersection: Route 40/SR 381 N

Jurisdiction:

Units: U. S. Customary Analysis Year: 2016

Project ID: Route 40 and SR 381 N East/West Street: Route 40 North/South Street: SR 381 N Intersection Orientation: EW

Study period (hrs): 0.25

	Vehi	icle Vol	umes an	d Adju	stme	nts		<u>.</u>	
Major Street:	Approach	Ea	stbound			We	stbound		
	Movement	1	2	3	}	4	5	6	
	-	L	T	R	1	L	T	R	
Volume		67	554	<u> </u>		<del></del>	572	19	<del></del>
Peak-Hour Facto	or, PHF	0.83	0.92				0.91	0.85	
Hourly Flow Ra	te, HFR	76	602				628	22	
Percent Heavy '	Vehicles	3							
Median Type/Sto RT Channelized		Undiv.	ided			/			
Lanes		0	.1.				1 (	0	
Configuration		$\mathbf{L}'$	F				T	3	
<sup>T</sup> pstream Signa	1?		No.				No		
Minor Street:	Approach	No	rthbound	d	· · · · · ·	So	uthbound	<u> </u>	<del>_</del>
	Movement	7	8	9	1	10	11	12	
		L	T	R	1	L	Т	R	
Volume		<del></del>	<del></del>		<del></del>	45	Ō	53	<del></del>
Peak Hour Facto	or, PHF					0.71	0.50	0.68	•
Hourly Flow Rat	te, HFR					63	0	77	
Percent Heavy	Vehicles					3	3	3	
Percent Grade	(육)		-5				-7		
Flared Approach	n: Exists?/	Storage			/			No	/
Lanes						0	1 (	)	
Configuration			•				LTR		

Approach	_Delay, EB	Queue WB	Le	ngt	h, and Lev Northbour		Ser		outhbound	<del></del>
Movement	1	4	l	7	8	9	1	10	11	12
Lane Config	LT		Ì						LTR	
v (vph)	76	<u> </u>							140	
C(m) (vph)	931								232	
v/c	0.08								0.60	
95% queue length	0.27								3.50	
Control Delay	9.2								41.6	
os:	А								E	
Approach Delay									41.6	
Approach LOS									E	

TWO-WAY STOP CONTROL (TWSC) ANALYSIS

Phone: E-Mail: Fax:

\_\_\_\_

Analyst: TR

Agency/Co.: McMillen Engineering

Date Performed: 10/9/2005

Analysis Time Period: Weekday PM Base Intersection: Route 40/SR 381 N

Jurisdiction:

Units: U. S. Customary

Analysis Year: 2016

Project ID: Route 40 and SR 381 N East/West Street: Route 40 North/South Street: SR 381 N

Intersection Orientation: EW Study period (hrs): 0.25

	Vehicle	Volumes	and	Adjustmen	ts			
Major Street Movements	_ 1	2	<sup>′</sup> 3	4	5	6		
	L	T .	R	Ŀ	${f T}$	R		
Volume	67	554			572	19		
Peak-Hour Factor, PHF	88.0	0, 92			0.91	0.85		
Peak-15 Minute Volume.	19	151			157	· 6		
Hourly Flow Rate, HFR	76	602			628	22		
Percent Heavy Vehicles	3							
Median Type/Storage RT Channelized?	Und:	ivided		/				
Lanes	D	1			1	0		
Configuration	I	L <b>T</b>			T	R		
Upstream Signal?		No			No			
Minor Street Movements	<del>-                                    </del>	8	9	10	11	12		
	L	T	R	L	T	R		
Volume	- <del></del>			45	0	53		
Peak Hour Factor, PHF				0.71	0.50	0.68		
Peak-15 Minute Volume				16	0	19		
Hourly Flow Rate, HFR				63	0	77		
Percent Heavy Vehicles				3	3	3		
Percent Grade (%)		-5			-7			
Flared Approach: Exists	s?/Storag	re		/		No	/	
RT Channelized?	•			0	1 (	•		
Lanes				0		)		
Configuration					LTR			
						<del></del>		

Movements	_Pedestrian 13	Volumes 14		-	
Flow (ped/hr)	0	0	0	0	

#### TWO-WAY STOP CONTROL SUMMARY

Analyst: TR

.gency/Co.: McMillen Engineering

Date Performed: 10/9/2005

Analysis Time Period: Saturday Peak Base Intersection: Route 40/SR 381 N

Jurisdiction:

Units: U. S. Customary Analysis Year: 2016

Project ID: Route 40 and SR 381 N East/West Street: Route 40 North/South Street: SR 381 N

North/South Sta Intersection On		81 N EW		9	Study	perio	d (hrs)	: 0.2	5
	Vehi	.cle Vol	umes and	d Adiu	ıstme	nts			
Major Street:	Approach		stbound				stbound	i	
	Movement	1	2	3	1	4	5	6	
		L	T	R	i	L	T	R .	
Volume		89	624				441	65	
Peak-Hour Facto	or, PHF	0.91	0.84				0.84	0.78	
Hourly Flow Rat	ce, HFR	97	742				<b>5</b> 25	83	
Percent Heavy \		3						~-	
Median Type/Sto		Undiv	ided			/			
RT Channelized?	?								
Lanes		0	1				1	0	
Configuration		L	T				T	rR	
pstream Signal	L?		No			•	No		
Minor Street:	Approach	No	rthbound	i		So	uthboun	id	<del></del>
	Movement	7	8	. 9	1	10	11	12	
		L	T	R	I	L	T	R	
Volume						46	0	54	
Peak Hour Facto						0.70	0.50	0.77	
Hourly Flow Rat	e, HFR					65	0	70	
Percent Heavy V	<i>l</i> ehicles					3	3	3	
Percent Grade (	(8)		<b>-</b> 5 .				-7		
Flared Approach	ı: Exists?/	Storage			/			No	/
Lanes						0	1	0.	
Configuration							LTR		
							<del></del>		
Approach	Delay, Q EB		-	id Lev hboun		r Serv		hbound	
Approach Movement	1	₩B 4 I	Nort 7	nuoan. B	1a 9	1 -		nbouna 11	1 2
Lane Config	LT	4	,	u	9	.	-	LTR	12

Approach	_Delay, EB	Queue WB	Le	ngt	h, and Le Northbou		Ser		outhbound	
Movement	1	4	1	7	8	9	1	10	11	12
Lane Config	LT		l				1		LTR	
v (vph)	97								135	
C(m) (vph)	966								201	
v/c	0.10								0.67	
95% queue length	0.33								4.10	
Control Delay	9.1								53.3	
os	Α								F	
Approach Delay									53.3	
Approach LOS									F	

Phone: E-Mail: Fax:

TWO-WAY STOP CONTROL (TWSC) ANALYSIS

Analyst: TR

Agency/Co.: McMillen Engineering

Date Performed: 10/9/2005

Analysis Time Period: Saturday Peak Base Intersection: Route 40/SR 381 N

Jurisdiction:

Units: U. S. Customary

Analysis Year: 2016

Project ID: Route 40 and SR 381 N East/West Street: Route 40 North/South Street: SR 381 N

Intersection Orientation: EW Study period (hrs): 0.25

	Vehicle	Volumes	and	Adjustmen	ts		
Major Street Movements	_ 1	2 ·	3	4	5	6 .	
	${f r}$ .	T	R	${f L}$	${f T}$	R	
√olume	89	624			441	65	
Peak-Hour Factor, PHF	0.91	0.84			0.84	0.78	
Peak-15 Minute Volume	24	186			131	21	
Hourly Flow Rate, HFR	97	742			525	83	
Percent Heavy Vehicles	3 .						
Median Type/Storage	Undi	vided		/			
RT Channelized?							
Lanes	0	1			1	0	•
Configuration	L	T			T	R	
Upstream Signal?		No			No		
<u></u>			,	<del></del>			<u> </u>
Minor Street Movements	7	8	9	10	11	12	
	${f L}$	${f T}$	R	L	${f T}$	R	
Volume				46	0	54	
Peak Hour Factor, PHF				0.70	0.50	0.77	
Peak-15 Minute Volume				16	0.50	18	
Hourly Flow Rate, HFR				65	0	70	
Percent Heavy Vehicles				3	3	3	
Percent Grade (%)		-5		J	_ 7	J	
Flared Approach: Exist:	2/6+022	•		,	1.	No	/
RT Channelized?	:/Scorag	C.		/		NO	,/
				0	1 (	n	
Lanes				U		J	
Configuration					LTR		
			<u> </u>				

Movements	Pedestrian 13			justments_ 16		
Flow (ped/hr)	0	0	0	0	·	

#### TWO-WAY STOP CONTROL SUMMARY

Analyst:

T'R

.gency/Co.:

McMillen Engineering

Date Performed:

10/9/2005

Analysis Time Period: Weekday PM Base

Intersection:

Route 40/ Hawes Road

Jurisdiction:

Units: U. S. Customary

2016

Α

Analysis Year:

Project ID: Route 40 and Hawes Road

East/West Street: Route 40

OS

Approach Delay

Approach LOS

North/South Street: Hawes Road

Intersection Orientation: EN

Study period (hre) + 0.25

D

25.9

D

Intersection Orientatio	n: EW		S	Study perio	d (hrs):	0.25
77.	ehicle Vol	umae and	2440	ietmante		
Major Street: Approach		stbound	. najt		stbound	
Movement		2	3	4	5	6
120 4 CINCTIC	L	T	R	L	T	Ř
						<u> </u>
Volume	23	576			414	41
Peak-Hour Factor, PHF	0.66	0.92			0.91	0.66
Hourly Flow Rate, HFR	34.	626			454	62
Percent Heavy Vehicles	3			•		
Median Type/Storage	Undiv.	i.ded		/		
RT Channelized?		. •				
Lanes	Ó	1 .			1 0	
Configuration	Ľ	r			TR	
<sup>™</sup> pstream Signal?		No			ЙО	
Minor Street: Approach	No	rthbound		So	uthbound	
Movement	7	8	9	10	11	12
	Ĺ	Ť	R	i L	${f T}^-$	R
•		_	•	• –	_	
Volume	<del></del>			41	0	46
Peak Hour Factor, PHF				0.62	0.50	0.66
Hourly Flow Rate, HFR				66	Ō	69
Percent Heavy Vehicles				3	3	3
Percent Grade (%)		~5			-10	
Flared Approach: Exists	s?/Storage			/		No /
Lanes				. 0	1 0	'
Configuration					LTR	
·						
Delay,	. Queue Ler	igth, an	d Lev	el of Serv	i.ce	
Approach EB	WB	Nort	hboun	d	South	oound
Movement 1	4	7	8	9   3	10 13	1 12
Lane Config LT	1	•		1	Ľ	rr
v (vph) 34			<u></u> _	<del></del>	13	35
C(m) (vph) 1045	)					)5
v/c 0.03						. 4 4
95% queue length 0.10						.16
Control Delay 8.6						5.9

Phone: E-Mail:

Fax:

TWO-WAY STOP CONTROL(TWSC) ANALYSIS

Analyst: TF

Agency/Co.: McMillen Engineering

Date Performed: 10/9/2005

Analysis Time Period: Weekday PM Base

Intersection:

Route 40/ Hawes Road

Jurisdiction:

Entrange Route 40, names no

Dulled Colour

Units: U. S. Customary

Analysis Year: 2016

Project ID: Route 40 and Hawes Road East/West Street: Route 40

East/West Street: Route 40
North/South Street: Hawes Road

	Vehicle	Volumes	and	Adjustmen	ts		<u> </u>
Major Street Movements	_ 1	2	3	4	5	6	
	. L	T .	R	L	${f T}$	R	
Volume	23	576			414	41	<u></u>
Peak-Hour Factor, PHF	0.66	0.92			0.91	0.66	
Peak-15 Minute Volume	9	157			114	16	
Hourly Flow Rate, HFR	34	626			454	62	•
Percent Heavy Vehicles	3						
Median Type/Storage RT Channelized?	Undi	.vided		/			
Lanes	0	1			1	0	
Configuration	I	T			T	R	
Upstream Signal?		No			No		
Minor Street Movements	7	8	9	10	11	12	
	${f r}$	T	R	L	T	R	
Volume		<del></del> -		41	0	46	
Peak Hour Factor, PHF				0.62	0.50	0.66	
Peak-15 Minute Volume				17	0	17	
Hourly Flow Rate, HFR				66	0	69	
Percent Heavy Vehicles				3	3	3 1	
Percent Grade (%)		-5			-10		
Flared Approach: Exists	:?/Storad	e		/		No	1.
RT Channelized?	-, 9	_		,		1	•
Lanes				0	1 .	0	
Configuration				v	LTR	-	

Movements	Pedestrian 13	Volumes 14	'	justments_ 16	
Flow (ped/hr)	0	0	0	0	

#### TWO-WAY STOP CONTROL SUMMARY

Analyst: TR

Agency/Co.: McMillen Engineering -

Date Performed: . 10/9/2005 Analysis Time Period: Saturday Base

Intersection:

Route 40/ Hawes Road

Jurisdiction:

C(m) (vph)

95% queue length

Control Delay

Approach Delay

Approach LOS

v/c

iOS

1013

0.03

0.11

8.7

Units: U. S. Customary

Analysis Year:

2016 Project ID: Route 40 and Hawes Road

East/West Street: Route 40. North/South Street: Hawes Road

233

0.22

0.81

24.7

С

24.7 С

Intersection Orientation	: EW		S	tudy per	iod (hrs):	0.25	
Vel	nicle Volu	umes and	Adju	stments			_
Major Street: Approach	Eas	stbound	_		Westbound		
Movement	1	2	3	4	5	6	
	L	${f T}$	R	L	T	R ·	
Volume	28	671			431	23	
Peak-Hour Factor, PHF	0.78	0.84			0.84	0.58	
Hourly Flow Rate, HFR	35	798			513	39	
Percent Heavy Vehicles	3				~-		
Median Type/Storage	Undiv	ided '		/			
RT Channelized?							
Lanes	0	1			1 (	)	
Configuration	L			•	TF	₹	
Upstream Signal?		No			No		
Minor Street: Approach	No	thbound			Southbound		
Movement	. 7	8	9	10	11	12	
	L	Т	R	L	T	R	
Volume			<del></del>	21	0	15	
Peak Hour Factor, PHF				0.79	=	0.58	
Hourly Flow Rate, HFR				26	0	25	
Percent Heavy Vehicles				3	3	3	
Percent Grade (%)		-5		_	~10	_	
Flared Approach: Exists?	/Storage	•		/		No .	/
Lanes	,			· · · (	) 1 (	)	
Configuration	·				LTR		
				1 - 5 6	· · · · · · · · · · · · · · · · · · ·		
	Queue Len					hound	
Approach E8 Novement 1	WB 1	North 7 8		a 9 1		bound	2
	4 [	,	'	2			<u>.</u>
Lane Config L'Î	1			J	1.	TR	
(vph) 35						1	

Phone: E-Mail: Fax:

TWO-WAY STOP CONTROL (TWSC) ANALYSIS

Analyst:

Agency/Co.:

McMillen Engineering

Date Performed:

10/9/2005

Analysis Time Period: Saturday Base

Intersection:

Route 40/ Hawes Road .

Jurisdiction:

Units: U. S. Customary

Analysis Year:

2016

Project ID: Route 40 and Hawes Road

· East/West Street:

Route 40 ·

North/South Street:

Hawes Road

Intersection Orientation: EW

Study period (hrs): 0.25

		•		• .			
	Vehicle	Volumes	and A	ldjustmen	ts	·	
Major Street Movements	1	2	3	4	5	6	
	$\mathbf{L}$	T	R	L	T	R	
Volume	28	671	· <del></del>	<del> </del>	431	23	<del></del>
Peak-Hour Factor, PHF	0.78	0.84			0.84	0.58	
Peak-15 Minute Volume	9	200			128	10	
Hourly Flow Rate, HFR	35	798 <sup>.</sup>			513	39	
Percent Heavy Vehicles	3					- <b>-</b> .	
Median Type/Storage RT Channelized?	Undi	vided		/			
Lanes	0	1			1	0 -	
Configuration	I	T			Ţ	R	
Upstream Signal? -		No			No		
Minor Street Movements	7	8	9	10	11	12	<del></del>
	Ĺ	Т	R	L	T	R	
Volume		·	<b></b>	21	0	15	·
Peak Hour Factor, PHF				0.79	0.50	0.58	
Peak-15 Minute Volume			,	7	0	6	
Hourly Flow Rate, HFR				26	0	25	
Percent Heavy Vehicles				3	3	3	
Percent Grade (%)		<b>→</b> 5			-10		
Flared Approach: Exists	?/Storaq	е		/		No	/
RT Channelized?	-			,			
				0	1 (	1	
Lanes							

Movements	Pedestrian	Volumes 14	and Ad 15	justments_ 16	<u> </u>	
Flow (ped/hr)	0	0	0	0		

#### TWO-WAY STOP CONTROL SUMMARY

Analyst:

Agency/Co.:

McMillen Engineering

Date Performed:

10/9/2005

Analysis Time Period: Weekday PM Base

Intersection:

Route 40/ Marker Road

Jurisdiction:

Units: U. S. Customary

2016

Analysis Year:

Project ID: Route 40 and Marker/Proposed Main Driveway

East/West Street:

Route 40

East/West Stree North/South Str	reet: Mar	te 40 ker Road			:			•	_	
Intersection O	cientation:	EW		St	udy	period	l (hrs)	: 0.2	5	
	Veh	icle Vol	umes and	Adjus	tme	nts				
Major Street:	Approach		stbound	_			tbound			
2	Movement	1	2	3	1	4	5	6 .		
		L	T	R·	į	L	T	R .		
17 = 1	·		620	0		<u> </u>	455		-	
Volume	bun			9		7				
Peak-Hour Facto			0.94	0.67		0.50	0.94			
Hourly Flow Rat			659	13		14	484			
Percent Heavy V						,3				
Median Type/Sto RT Channelized?		Undiv	ided		,	/				
Lanes			1 0			0	1			
Configuration			TR			LI				
_	· ·		. No			Ti T	No			
Upstream Signal	. f		NO				NO			
Minor Street:	Approach	No	rthbound			Sou	thboun	d		
	Movement	7	8	9		10	11	12		
		Ł	T	R .	1	L	T	Ŕ		
Volume		3	0	11		<del></del>	<del></del>		<del> </del>	
Peak Hour Facto	Y DHE	0.75	0.50	0.62						
Hourly Flow Rat		4	0.50	17						
Percent Heavy V	*	3	3	3	•					
Percent Grade (		3	-5	3			3			
Flared Approach		/Starage		No ·	,		J		,	
Lanes	r. EXTOCO:	o Orage	1 0	NO	,				,	
		U	LTR							
Configuration			DIV							
	· · · · · · · · · · · · · · · · · · ·	<del></del>					<del></del>	<del></del>	<del></del>	
A mark a col-			ngth, and			: Servi		halana e e e		
Approach	EB	WB		nbound		. 4		hbound		
Movement	1	4		3	9	1	0	11	12	
Lane Config		LT	1	LTR	•	ſ				
v (vph)		14		21			_ <u>·</u>	<del></del>		
C(m) (vph)		914	3	373						
v/c		0.02		0.06						
95% queue lengt	h	0.05		1.18						
Control Delay		9.0		.5.2						
,os		Α		С						
Approach Delay			1	5.2						
Approach LOS				С						
- <del>-</del>										

Phone: Fax: E-Mail: TWO-WAY STOP CONTROL (TWSC) ANALYSIS Analyst: TR Agency/Co.: McMillen Engineering Date Performed: 10/9/2005 Analysis Time Period: Weekday PM Base Route 40/ Marker Road Intersection: Jurisdiction: Units: U. S. Customary Analysis Year: 2016 Project ID: Route 40 and Marker/Proposed Main Driveway East/West Street: Route 40 Marker Road North/South Street: Study period (hrs): 0.25 Intersection Orientation: EW Vehicle Volumes and Adjustments Major Street Movements 6 2 3 1 . L Т R. Т R L **Volume** 9 620 455 Peak-Hour Factor, PHF 0.94 0.67 0.50 0.94 Peak-15 Minute Volume 165 3 4 121 Hourly Flow Rate, HFR 659 13 14 484 Percent Heavy Vehicles 3 Median Type/Storage Undivided RT Channelized? Lanes 1 0 1 Configuration TRLT Upstream Signal? No No Minor Street Movements 8 10 11 12 Т R Î L L R Volume 3 11 Peak Hour Factor, PHF 0.75 0.50 0.62 Peak-15 Minute Volume 0 4 1 Hourly Flow Rate, HFR 17 0 3 Percent Heavy Vehicles Percent Grade (%) 3 Flared Approach: Exists?/Storage No RT Channelized? Lanes 0 1 0 Configuration LTR Pedestrian Volumes and Adjustments Movements 13 14 15

0

0

0

Flow (ped/hr)

#### TWO-WAY STOP CONTROL SUMMARY

Analyst:

TR

Agency/Co.:

McMillen Engineering

Date Performed:

10/9/2005 Analysis Time Period: Saturday Base

Intersection:

Route 40/ Marker Road

Jurisdiction:

Units: U. S. Customary

Analysis Year:

2016 .

Project ID: Route 40 and Marker/Proposed Main Driveway

East/West Street:

Route 40

North/South Street:

Marker Road

Intersection Orientation: EW

Study period (hrs): 0.25

	Vehicle	Volu	mes and	Adjus	tme	nts			
Major Street: Appr	oach	Eas	tbound			Wes	tbound		
. Move	ement 1		2	3	j	4	- 5	6	
	I	;	· T	R	1	L	T	R	
Volume	<u>·</u>		607	3		6	450		
Peak-Hour Factor, F	PHF		0.80	0.75		0.62	0.87		
Hourly Flow Rate, H		•	758	4		9	517		
Percent Heavy Vehic			750			3	J.,		
Median Type/Storage		ndivi	dod			, ,			
RT Channelized?		HUTAT	ueu			,			
Lanes			1 0			0	1		
Configuration			TR			LT			
Upstream Signal?			No				No		
Minor Street: Appr	oach	Nor	thbound			Sou	thbound		
* -	ment 7		8	9	1	10	11	12	
	I		T .	R	i	L	T	R	
Volume	4		0	6					
Peak Hour Factor, P	HF 1	.00	0.50	0.42					
Hourly Flow Rate, H			0	14					
Percent Heavy Vehic			3	3					
Percent Grade (%)	_		-5	_			3		
Flared Approach: E	xists?/Sto	rage		No	1				/
Lanes	., 200	0	1 0	-	•				•
Configuration .		·	LTR						
		<del></del>					· <del>-</del>	_ <del></del>	<u></u>
	elay, Queu				L O	f Servi			
Approach	EB WB			hbound	^	. 3	South		1.0
Movement	1 4	1	7.	R	9		0 11	ı	12

Approach	_Delay, EB	Queue WB	Le		, and Leve Northbound		\$er		outhbour	nd
Movement	1	4	1	7	8	9	I	10	11	12
Lane Config		$_{ m LT}$	}		LTR		}			
v (vph)		9			18			·	·	
C(m) (vph)		846			315					
v/c		0.03	l		0.06					
95% queue length		0.03	3		0.18					
Control Delay		9.3			17.1					
os		A			С					
Approach Delay					17.1					
Approach LOS					С					

Fax: Phone: E-Mail: TWO-WAY STOP CONTROL (TWSC) ANALYSIS TR Analyst: McMillen Engineering Agency/Co.: Date Performed: 10/9/2005 Analysis Time Period: Saturday Base Intersection: Route 40/ Marker Road Jurisdiction: Units: U. S. Customary Analysis Year: 2016 Project ID: Route 40 and Marker/Proposed Main Driveway East/West Street: Route 40 North/South Street: Marker Road Study period (hrs): 0.25 Intersection Orientation: EW Vehicle Volumes and Adjustments Major Street Movements 1 2 3 L T R L T R 607 √olume 3 6 450 Peak-Hour Factor, PHF 0.80 0.75 0.62 0.87 Peak-15 Minute Volume 190 1 2 129 Hourly Flow Rate, HFR 758 9 517 Percent Heavy Vehicles 3 Median Type/Storage Undivided RT Channelized? Lanes 1 0 0 1 Configuration TR LT Upstream Signal? No No Minor Street Movements 7 8 9 10 11 12 Т R  $\mathbf{L}$ Ŀ Volume 0 6 Peak Hour Factor, PHF 1.00 0.50 0.42 Peak-15 Minute Volume 0 4 1 Hourly Flow Rate, HFR 4 0 14 Percent Heavy Vehicles 3 3 Percent Grade (%) -5 3 Flared Approach: Exists?/Storage No RT Channelized? Lanes 1 0 Configuration LTR Pedestrian Volumes and Adjustments Movements 13 14 15

0

Ō

0

Flow (ped/hr)

#### TWO-WAY STOP CONTROL SUMMARY

\nalyst: .

.gency/Co.:

McMillen Engineering 10/9/2005

Analysis Time Period: Weekday PM Base

Date Performed: Intersection:

Route 40/Smith School Hse Road

Jurisdiction:

Units: U. S. Customary

Analysis Year: 2016

Project ID: Route 40 and Smith School House Road Intersection

East/West Street:

Percent Grade (%)

Configuration

Lanes

Flared Approach: Exists?/Storage

Route 40

Dinner Bell Road North/South Street:

Intersection Orientation: EW

Study period (hrs): 0.25

10

1

LTR

No

intersection (	Tiencacion:	EW		٥	cuuy	berro	u (nrs)	. 0.23	
	Vehi	icle Vol	umes and	l Adju	stme	ents			
Major Street:	Approach	Ea	stbound	_		We	stbound		
-	Movement	1	2	3	i	4	5	6 ·	
		L ·	Ť	R	1	L	T.	R	
Volume		18	614				433	9	<del></del>
Peak-Hour Fact	or, PHF	0.67	0.94				0.94	0.67 ·	
Hourly Flow Ra	ite, HFR	26	653				460	13	•
Percent Heavy	Vehicles	3							
Median Type/St RT Channelized	_	Undiv:	ided			<i>'</i>	•		
Lanes		0	1				1 (	)	
Configuration		L'	Ր				TF	₹ .	
¹pstream Signa	11?		No				No		
Minor Street:	Approach	No	thbound		<del></del>	Son	uthbound	i	<del></del>
	Movement	7	8	9 .	1	10	11	12	
		L	T	R	1	L	T	R .	
Volume	<del></del>	<u> </u>		<del></del> -		13	0	29	
Peak Hour Fact	or, PHF					0.75	0.38	0.93	
Hourly Flow Ra						17	0	31	
Percent Heavy	Vehicles					3	. 3	3	
·									

	_Delay,	Queue	Le	ngt	h, and Lev		Ser			
Approach	EB	WB			Northbour	nd		\$0	outhboun	ıd
Movement	1	4	1	7	8	9		10	11	12
Lane Config	LT		ŀ				ļ		LTR	
v (vph)	26	······································		_					48	<u>-</u>
C(m) (vph)	1084								356	
v/c	0.02								0.13	
95% queue length	0.07								0.46	
Control Delay	8.4								16.7	
os	A								С	
Approach Delay	•								16.7	
Approach LOS									С	

Phone: Fax: E-Mail: TWO-WAY STOP CONTROL (TWSC) ANALYSIS Analyst: Agency/Co.: McMillen Engineering Date Performed: 10/9/2005 Analysis Time Period: Weekday PM Base Intersection: Route 40/Smith School Hse Road Jurisdiction: Units: U. S. Customary 2016 Analysis Year: Project ID: Route 40 and Smith School House Road Intersection East/West Street: Route 40 North/South Street: Dinner Bell Road Intersection Orientation: EW Study period (hrs): 0.25 Vehicle Volumes and Adjustments 6 Major Street Movements 1 2 3 T Ľ. Т R 433 9 √olume 18 614 Peak-Hour Factor, PHF 0.67 0.94 0.94 0.67 Peak-15 Minute Volume 7 163 115 3 653 Hourly Flow Rate, HFR 26 460 13 Percent Heavy Vehicles 3 Median Type/Storage Undivided RT Channelized? Lanes 1 1 Configuration LT TR Upstream Signal? Νo No Minor Street Movements 7 8 9 10  $\overline{11}$ 12 L Т R Т R L Volume 13 0 29 0.38 Peak Hour Factor, PHF 0.75 0.93Peak-15 Minute Volume 0 8 4 Hourly Flow Rate, HFR 17 0 31 Percent Heavy Vehicles 3 3 Percent Grade (%) 10 Flared Approach: Exists?/Storage No RT Channelized? Lanes 0 1 0 Configuration LTR Pedestrian Volumes and Adjustments Movements 13 14 15 16

0

Flow (ped/hr)

#### TWO-WAY STOP CONTROL SUMMARY\_

Analyst: TR

Agency/Co.: McMillen Engineering

Date Performed: 109/2005

Analysis Time Period: Saturday Peak Base

Intersection: Route 40/Smith School Hse Road

Jurisdiction:

Units: U. S. Customary Analysis Year: 2016

Project ID: Route 40 and Smith School House Road Intersection

East/West Street: Route 40

North/South Street: Dinner Bell Road

Major Street:	Approach	cle Vol Ea	stbound		13 CILIC		stbound	stbound			
	Movement	1	2	<sup>`</sup> 3	1	4	5	6			
		L	T	R	!	L	T	R .			
Volume		15	554				442	. 11			
Peak-Hour Fact		0.50	0.87				0.87	0.50			
Hourly Flow Ra	te, HFR	30	636				508	22			
Percent Heavy	Vehicles	3	~-								
Median Type/St RT Channelized		Undiv.	ided			/					
Lanes		0	1				1	0			
Configuration		L'	ľ				· <b>T</b> 3	3			
Ipstream Signa	1?		No				No				
Minor Street:	Approach	No	rthboun	d ·			uthbound	ri			
	Movement	7	8	9	Į.	10	11	12			
		L	Ţ	R	l	L	Т	R			
/olume				<del>.,</del> _		9	0	13	- <del></del>		
Peak Hour Fact	-					0.40	0.38	0.60			
Hourly Flow Ra						22	0	21			
Percent Heavy						3	3	3			
Percent Grade							10				
Flared Approac	h: Exists?/	Storage			/			No	/		
Lanes	_					0		)			
Configuration	•						LTR				

Approach	_Delay, EB	Queue WB.		ngt	h, and Lev Northboun		Ser		outhbound
Movement	1	4		7	8	9	1	10	11 12
Lane Config	LT								LTR
v (vph)	30					<del></del>	<del></del> -		43
C(m) (vph)	1032								282
v/c	0.03								0.15
95% queue length	0.09				•				0.53
Control Delay	8.6								20.0
os	Α								С
Approach Delay									20.0
Approach LOS									С

Phone: E-Mail: Fax:

Analyst:

TR

Agency/Co.:

McMillen Engineering

Date Performed:

109/2005

Analysis Time Period: Saturday Peak Base

Intersection:

Route 40/Smith School Hse Road

TWO-WAY STOP CONTROL (TWSC) ANALYSIS

Jurisdiction:

Units: U. S. Customary

Analysis Year:

2016

Project ID: Route 40 and Smith School House Road Intersection

East/West Street:

Route 40

North/South Street:

Dinner Bell Road

Intersection Orientation: EW

Study period (hrs): 0.25

•				•		•	
	Vehicle	Volumes	and	Adjustmen			
Major Street Movements	1	2	3	4	5	6	
·	L	${f T}$	R	${f L}$	T	R	
						<u>.</u>	
Volume	15	554			442	11	
Peak-Hour Factor, PHF	0.50	0.87			0.87	0.50	
Peak-15 Minute Volume	8	159			127	6	
Hourly Flow Rate, HFR	30	636			508	22	
Percent Heavy Vehicles	3	<b>→ →</b>					
Median Type/Storage	Undi	ivided		/			
RT Channelized?							
Lanes	0	1			1	0	
Configuration	I	T			T	R	
Upstream Signal?		ИО			No	•	
•							
Minor Street Movements	7	8	9	10	11	12	
•	${f L}$	${f T}$	R	L	T	R	
		· · ·				•	
Volume				9	0	13	•
Peak Hour Factor, PHF				0.40	0.38	0.60	
Peak-15 Minute Volume				6	0	5	
Hourly Flow Rate, HFR				22	0	21	
Percent Heavy Vehicles				3	3	3	
Percent Grade (%)	•				10		
Flared Approach: Exist	s?/Storag	je		/		ИО	/
RT Channelized?	-						
Lanes				0	1	D	
Configuration					LTR		

Movements	_Pedestrian 13			justments_ 16	
Flow (ped/hr)	0	0	0	0	

#### TWO-WAY STOP CONTROL SUMMARY\_

Analyst: TR

.gency/Co.: McMillen Engineering

Date Performed: 10/9/2005 Analysis Time Period: Weekday PM Base

Intersection: Route 40/ Dinner Bell Road

Jurisdiction:

Units: U. S. Customary Analysis Year: 2016

Project ID: Route 40 and Dinner Bell Road Intersection

East/West Street: Route 40

North/South Street: Dinner Bell Road

		nicle Volu		i Adjus	tme				
Major Street:			tbound	_			stbound		
	Movement	1 .	_	3	!	4 '	5 ·	6	
	•	L	Т	R	1.	L	T ·	R	
Volume		29	559	52	<del></del>	15	396	42	
Peak-Hour Fact	or, PHF	0.81	0.94	0.78		0.58	0.94	0.79	
Hourly Flow Ra	te, HFR	35	594	66		25	421	53	
Percent Heavy	Vehicles	3				3 .			
Median Type/St		Undivi	.ded			/			
RT Channelized					•				
Lanes		0	1 0	1		0	1	0	
Configuration		LT	'R			LT	'R		
∏pstream Signa	1?		No				ИО		
Minor Street:	Approach	Nor	thbound	<u> </u>		Son	thboun	d	
	Movement	7	8	9		10	11	12	
		· L	T ·	R	-	L	T	R	
Volume		29	8	18		40	3	17	
Peak Hour Fact	or, PHF	0.81	0.58	0.67		0.75	0.38	0.63	
Hourly Flow Ra	te, HFR	35	13	26		53	7	26	
Percent Heavy	Vehicles	3	3	3		3	3	3	
Percent Grade		•	-4.				3		
Flared Approac	h: Exists?	/Storage		No	/			No	/
Lanes		Ŏ.	1 0			0	1	0	
Configuration			LTR				LTR		
						<del></del> .			
	Delay,	Queue Len	gth, an	d Leve	1 0:	f Servi	.ce_		
Approach	EB	WB		hbound				hbound	
Movement	1	4	7	8	9	1	.0	11	12

Approach	EB	WB	_	Northbound		S	outhbound
Movement	1	4	7	8 9	1	10	11 12
Lane Config	LTR	LTR }		LTR	1		LTR
v (vph)	35	25		74			86
C(m) (vph)	1083	923		191			174
v/c	0.03	0.03		0.39			0.49
95% queue length	0.10	0.08		1.70			2.41
Control Delay	8.4	9.0		35.3			44.4
os	А	A		E			王
Approach Delay				35.3			44.4
Approach LOS				E			王

Phone: E-Mail: Fax:

TWO-WAY STOP CONTROL (TWSC) ANALYSIS

Analyst: TR

Agency/Co.: McMillen Engineering

Date Performed: 10/9/2005

Analysis Time Period: Weekday PM Base

Intersection: Route 40/ Dinner Bell Road Jurisdiction:

Units: U. S. Customary Analysis Year: 2016

Project ID: Route 40 and Dinner Bell Road Intersection

East/West Street: Route 40

North/South Street: Dinner Bell Road

	Vehicle	Volume:	s and Ad	justmen	ts		
Major Street Movements	1	2	3	4	5	6	
	L	T	R	L	T	R	•
/olume	29	559	52	15	396	42	<u> </u>
Peak-Hour Factor, PHF	0.81	0.94	0.78	0.58	0.94	0.79	
Peak-15 Minute Volume	9	149	17	6	105	13	
Hourly Flow Rate, HFR	35	.594	66	25	421	53	
Percent Heavy Vehicles	3			3			
Median Type/Storage	Undi	vided		/			
RT Channelized?			-				
Lanes	0	1	0	0	1	0	
Configuration	$\Gamma_{i}$	TR		$\mathbf{L}'$	TR		
Upstream Signal?		ИО		. :	No		
Minor Street Movements	7	8	9 .	1.0	11	12	· ·
	Ţ	${f T}$	R	L	T	R	
Volume	29	8	1.8	40	3	17	
Peak Hour Factor, PHF	0.81	0.58	0.67	0.75	0.38	0.63	
Peak-15 Minute Volume	9	3	7	13	2	7	
Hourly Flow Rate, HFR	35	13	26	53	7	26	
Percent Heavy Vehicles	3	3	3	3	3	3	
Percent Grade (%)		-4			3		
Flared Approach: Exist:	s?/Storage	9	No	1		No	/
RT Channelized?							
Lanes	0	1	0	0	1	0	
Configuration		LTR			LTR		

Movements	Pedestrian 13	Volumes 14	and Ad	justments 16	 
Flow (ned/hr)		<u> </u>	0		 

#### TWO-WAY STOP CONTROL SUMMARY

Analyst:

TR:

Agency/Co.:

McMillen Engineering

Date Performed:

10/9/2005

Analysis Time Period: Saturday Base .

Intersection:

Route 40/ Dinner Bell Road

Jurisdiction:

Units: U. S. Customary

Analysis Year:

2016

Project ID: Route 40 and Dinner Bell Road Intersection

East/West Street:

Route 40

North/South Street:

Dinner Bell Road

Intersection Orientation: EW

Study period (hrs): 0.25

Vehicle Volumes and Adjustments Major Street: Westbound Approach Eastbound 1 2 3 5 6. Movement 4

T L Т R R  $\mathbf{L}$ 21 Volume 554 31 10 376 0.87 0.63 0.87 0.70 Peak-Hour Factor, PHF 0.75 0.68 Hourly Flow Rate, HFR 49 432 24 28. 636 14 Percent Heavy Vehicles -3 3

Median Type/Storage Undivided RT Channelized?

0 . 1 Lanes 0 1 0 Configuration LTR LTR Upstream Signal? No No

Minor Street: Northbound Southbound Approach 7 9 Movement 8 10 11 12 Т L R L  ${f T}$ R 59  $\overline{17}$ Volume 2 17 18 3 Peak Hour Factor, PHF 0.84 0.50 0.42 0.50 0.75 0.62 27 Hourly Flow Rate, HFR 70 4 40 36 4 Percent Heavy Vehicles 3 3 3 3 3 3 Percent Grade (%) -4 3 Flared Approach: Exists?/Storage No No 0 . 1 0 Lanes 1 0 Configuration LTR LTR

Approach	EB	WB	Ī	Northboun	el of d		S	outhbound	•
Movement	$\dot{1}$	4 1	7	8	9	- 1	10	11	12
Lane Config	LTR	LTR		LTR		I		LTR	
v (vph)	28	14		114				67	
C(m) (vph)	1100	904		191				200	
v/c	0.03	0.02		0.60				0.34	
95% queue length	0.08	0.05		3.31				1.39	
Control Delay	8.4	9.0		48.4				31.8	
os -	А	Α		E				D	
ipproach Delay				48.4				31.8	
Approach LOS				E				D	

Phone: E-Mail: Fax:

TWO-WAY STOP CONTROL (TWSC) ANALYSIS

Analyst: TF

Agency/Co.: McMillen Engineering

Date Performed: 10/9/2005
Analysis Time Period: Saturday Base

Intersection: Route 40/ Dinner Bell Road

Jurisdiction:

Units: U. S. Customary

Analysis Year: 2016

Project ID: Route 40 and Dinner Bell Road Intersection

East/West Street: Route 40

North/South Street: Dinner Bell Road

olume Peak-Hour Factor, PHF Peak-15 Minute Volume Hourly Flow Rate, HFR Percent Heavy Vehicles	1 L 21 0.75 7 28 3 Undi	2 T 554 0.87 159 636	3 R 31 0.63 12. 49	14	5 T 376 0.87 . 108 432	6 R 17 0.70 6	
Peak-Hour Factor, PHF Peak-15 Minute Volume Hourly Flow Rate, HFR Percent Heavy Vehicles	21 0.75 7 28 3	554 0.87 159 636	31 0.63 12	10. 0.68 4 14	376 0.87 . 108	17 0.70	
Peak-Hour Factor, PHF Peak-15 Minute Volume Hourly Flow Rate, HFR Percent Heavy Vehicles	0.75 7 28 3	0.87 159 636 	0.63 12.	0.68 4 14	0.87 . 108	0.70	
Peak-Hour Factor, PHF Peak-15 Minute Volume Hourly Flow Rate, HFR Percent Heavy Vehicles	7 28 3	159 636 	12.	4 14	. 108		
Peak-15 Minute Volume Hourly Flow Rate, HFR Percent Heavy Vehicles	28 3	636 		14		6.	
Percent Heavy Vehicles	3			— - <u>.</u>	433		
Percent Heavy Vehicles	•			_	304	24	
	Undi	111 dod		3			
Median Type/Storage		viaeu					
RT Channelized?				,			
Lanes	0	1	0	0	1	0	
Configuration	$\mathbf{L}^{i}$	TR		LT	'R	•	
Upstream Signal?		No			No		
Minor Street Movements	7	8	9	10	11	1.2	
	L	T	R	L	T	R	
Volume	59	2	17	18	3	17	
Peak Hour Factor, PHF	0.84	0.50	0.42	0.50	0.75	0.62	
Peak-15 Minute Volume	18	1	10	9	1	. 7	
Hourly Flow Rate, HFR	70	4	40	36	4	27	
Percent Heavy Vehicles	3	3	3	3	3	3	
Percent Grade (%)		-4			3		
Flared Approach: Exists?/	Storage	e	No	/		No	1
RT Channelized?	,			•			
Lanes	0	1	0 .	0	1	0	
Configuration	-	LTR	•		LTR		

	Pedestrian	Volumes	and Ad	justments	•	
Movements	13	14	15	16		
Flow (ped/hr)	0	0	0	0		

### APPENDIX 4

## CAPACITY ANALYSIS (2016 DEVELOPED CONDITIONS)

#### TWO-WAY STOP CONTROL SUMMARY

Analyst: RHH

gency/Co.: McMILLEN ENGINEERING

Date Performed: 11/23/2005

Analysis Time Period: WEEKDAY PM PEAK DEVELOPED

Intersection: SR40 / SR 381S Jurisdiction: WHARTON TOWNSHIP

Units: U. S. Customary

Analysis Year: 2016

Project ID: 2005-319

East/West Street: ROUTE 40 North/South Street: SR 381S Intersection Orientation: EW

Study period (hrs): 0.25

Intersection Ori	Lentation	: EW		St	udy	perio	d (hrs)	: 0.25
	Vel	nicle Volu	ımes and	l Adjus	tme	nts		
Major Street: A	Approach		stbound				stbound	
	Movement	1	. 2	3 .	- 1	4	5	6
· .		${f L}$	${f T}$	R	i	L	T	R
Volume			562	59	<u> </u>	57	565	
Peak-Hour Factor	· PHF		0.92	0.75		0.72	0.91	
Hourly Flow Rate	•		610	78		79	620	
Percent Heavy Ve	-			, o		3		
Median Type/Stor		Undivi	ರೆದರೆ			,		
RT Channelized?	.aye .	OHOTAT	.ueu	·		,		
Lanes			1 0	)		0	1	
Configuration			TF	t .		L	T	
"pstream Signal?	P		Мо				ИО	
Minor Street: A	approach	Nor	thbound			So	uthbound	 ำ
	ovement	7	.8 .	` 9	1	10.	11	12
-		L	T.	R	i	r .	T	R
Volume		56	0	63	· <u>.                                     </u>			<u> </u>
Peak Hour Factor	. PHF	0.71	1.00	1.00				
Hourly Flow Rate		78	0	63				•
Percent Heavy Ve		3	3	3		•		
Percent Grade (%		Ū	7				0	
Flared Approach:		/Storage	•	No	/		ŭ	/
Lanes		0	1 0		,			,
Configuration		•	LTR					
				•				
		Queue Len				f Serv	**********	
Approach .	EB	WB	Nort	hbound				nbound
Movement	1	4	7	8	9	1 :	10 1	11 12
Lane Config		$\mathbf{L}\mathbf{T}$		LTR		1		

Approach	_Delay, 	Queue WB	Le	ngt:	h, and L Northbo		Sei		outhbour	nd
Movement	1	4	1	7	8	9	1	10	11	12
Lane Config		LT	I		LTR		1			
v (vph)		79			141			<del></del>	<del></del>	
C(m) (vph)		901			197					
v/c		0.09	9		0.7	2				
95% queue length		0.29	)		4.5	7				
Control Delay		9.4			59.	2				
ာၭ		A			F					
.pproach Delay					59.	2				
Approach LOS					F					

Phone: .Fax: E-Mail: TWO-WAY STOP CONTROL (TWSC) ANALYSIS Analyst: RHH Agency/Co.: McMILLEN ENGINEERING 11/23/2005 Date Performed: Analysis Time Period: WEEKDAY PM PEAK DEVELOPED Intersection: SR40 / SR 381S WHARTON TOWNSHIP Jurisdiction: Units: U. S. Customary Analysis Year: 2016 Project ID: 2005-319 East/West Street: ROUTE 40 North/South Street: Study period (hrs): 0.25 Intersection Orientation: EW Vehicle Volumes and Adjustments Major Street Movements 1 2 3 4  $\mathbf{L}$ Т R L T R olume 562 59 57 565 Peak-Hour Factor, PHF 0.92 0.75 0.72 0.91 20 Peak-15 Minute Volume 153 20 155 79 620. Hourly Flow Rate, HFR 610 78 3 Percent Heavy Vehicles Median Type/Storage Undivided RT Channelized? Lanes 1 1 Configuration TR LTUpstream Signal? No No Minor Street Movements 9 11 12 8 10 L Т R L R Volume 56 63 0 Peak Hour Factor, PHF 0.71 1.00 1.00 Peak-15 Minute Volume 20 0 16 Hourly Flow Rate, HFR 78 0 63 3 Percent Heavy Vehicles 3 3 Percent Grade (%) Flared Approach: Exists?/Storage No RT Channelized? Lanes 1 Configuration LTR Pedestrian Volumes and Adjustments Movements 14 15 16

Flow (ped/hr)

#### TWO-WAY STOP CONTROL SUMMARY

Analyst:

.gency/Co.: McMILLEN ENGINEERING

Date Performed: 11/23/2005

Analysis Time Period: SATURDAY PEAK DEVELOPED

Intersection: SR40 / SR 381S Jurisdiction: WHARTON TOWNSHIP

Units: U. S. Customary

Analysis Year: 2016

Project ID: 2005-319

East/West Street: ROUTE 40 North/South Street: SR 381S Intersection Orientation: EW

Study period (hrs): 0.25

Intersection Orie	entation	: EW		St	udy	perio	d (hrs)	: 0.	25
·		nicle Volu		d Adjus	tme	nts	<u> </u>	-	· •
	proach		stbound			We	stbound		
Mo	ovement	1	2	3	- 1	4	5	6	
		L	${f T}$	R	ı	L .	T	R	
Volume			618	52		55	412		<del></del>
Peak-Hour Factor,	PHF		0.84	0.65		0.74	0.84		
Hourly Flow Rate,			735	80		74	490		
Percent Heavy Veh			- <del>-</del>		•	3	- <b>-</b> ,		
Median Type/Stora		Undivi	ded			/			
RT Channelized?						•			
Lanes		•	1 0	) ·		0	1		
Configuration			TF	Į.	•	L	T		
ipstream Signal?			No				No		
Minor Street: Ap		)	thbound	- <u></u>			uthbour		<del></del> .
-	proach vement	7	8		r	10	11	12	
· PAC	veidenc		о Т	9	l i	_			
		L	ľ	R	ì	L .	Т	· R	
Volume	<del></del>	34 .	0 .	75					
Peak Hour Factor,	PHF	0.86	1.00	0.78					
Hourly Flow Rate,	HFR	39	0 .	96					·
Percent Heavy Veh	icles	3	3	0					
Percent Grade (%)			7				0.		
Flared Approach:	Exists?	/Storage		No	1				/
Lanes		Ō	1 0						
Configuration		•	LTR						
·				<del></del>	<del></del>			· · ·	
	Delay,	Queue Len	gth, an	d Leve	l o	f Serv	ice		
Approach	EB	WB	Nort	hbound			Sout	hboun	d
Movement	1	4	7	8	9	1	10	11	12
Lane Config	•	LT		LTR		l			
v (vph)	<del></del>	74		135					
C(m) (vph)		808		257					
v/c		0.09		0.53					
95% queue length		0.30		2.80					
Control Delay		9.9		33.5					
OS DELLY		A		D					
Approach Delay		••		33.5					
Approach LOS				D					
TIPE TOWOIL MOO									

Phone: Fax: ` E-Mail: TWO-WAY STOP CONTROL (TWSC) ANALYSIS Analyst: Agency/Co.: McMILLEN ENGINEERING 11/23/2005 Date Performed: Analysis Time Period: SATURDAY PEAK DEVELOPED SR40 / SR 381S Intersection: WHARTON TOWNSHIP Jurisdiction: Units: U. S. Customary Analysis Year: Project .ID: 2005-319 East/West Street: ROUTE 40 North/South Street: SR 381S Study period (hrs): Intersection Orientation: EW Vehicle Volumes and Adjustments Major Street Movements 2 6 1 3 4 Т L T R L R olume 55 618 52 412 Peak-Hour Factor, PHF 0.84 0.65 0.84 0.74 Peak-15 Minute Volume 184 20 19 . 123 735 80 74 490 Hourly Flow Rate, HFR Percent Heavy Vehicles 3 Median Type/Storage Undivided RT Channelized? 1 Lanes 1 Configuration TR LTUpstream Signal? No No Minor Street Movements 8 10 11 12 L  $\mathbf{T}$ R Ŀ T R Volume 34 Ö 75 Peak Hour Factor, PHF 1.00 0.36 0.78 Peak-15 Minute Volume 10 Ω 24 0 Hourly Flow Rate, HFR: 39 96 Percent Heavy Vehicles Percent Grade (%) 0 Flared Approach: Exists?/Storage No RT Channelized? Lanes 0 ī 0 Configuration LTR Pedestrian Volumes and Adjustments Movements 13 14 15 16 Flow (ped/hr) -0 0 0

#### TWO-WAY STOP CONTROL SUMMARY

Analyst:

RHH

.gency/Co.:

McMILLEN ENGINEERING

Date Performed:

11/23/2005

Analysis Time Period: WEEKDAY PM PEAK DEVELOPED

Intersection:

SR40 / SR 381N

Jurisdiction:

WHARTON TOWNSHIP

Units: U. S. Customary

2016

Analysis Year:

approach Delay

Approach LOS

Project ID: 2005-319

East/West Street:

ROUTE 40

North/South Street:

SR 381N

Intersection Orientation: EW

Study period (hrs): 0.25

42.0

	Veh	icle Vol	umes and	Adjus	stme	nts		·	
Major Street: Ap	proach	Ea	stbound	_		We:	stbound		
Mo	vement	1	2	3	1	4	<b>়</b> 5	6	
		Ŀ	${f T}$	R	1	Ļ	T	R	
Volume		67	558	<u></u>			569	19	
Peak-Hour Factor,	PHF	0.88	0.92				0.91	0.85	
Hourly Flow Rate,		76	606				625	22	
Percent Heavy Veh		3							
Median Type/Stora		Undiv	ided :			1 .			
RT Channelized?	.90	OHQ	1000			•			
Lanes		0	1				1 0	•	
Configuration			T				TF		
Tpstream Signal?			No				No	•	
podroum orginar,							110		
Minor Street: Ap	proach	No	rthbound			Sot	ıthbound	<u> </u>	
	vement	7	8	9	- 1	10	11	12	
	٠	L	T	R	ļ	L	T	R ·	
Volume	-					46	0	53	
Peak Hour Factor,	PHF					0.71	1.00	0.68	
Hourly Flow Rate,						64	0	77	
Percent Heavy Veh						3	3	3	
Percent Grade (%)			0			•	<del>-</del> 7	-	
Flared Approach:		/Storage			1			No	/
Canes	,	5 -				0	1 0		
Configuration						•	LTR		
	<del></del> .								
	Delay, (	lueue T.e	ngth, and	i Leve	.1 ^	f Servi	ce		
Approach	BGIA,,	WB		nbound				bound	·
Novement	1	4 1		3	9	1 7		1 12	2
Lane Config	LT	- , 		-	_			TR	-
y		ı				ų.			
(vph)	76							41	
(m) (vph)	934						2	32	
r/c	0.08						0	.61	
5% queue length	0.27					•		.54	
Control Delay	9.2						4	2.0	
os	Α							E	

Phone: Fax: · E-Mail: TWO-WAY STOP CONTROL (TWSC) ANALYSIS Analyst: RHH Agency/Co.: McMILLEN ENGINEERING Date Performed: 11/23/2005 Analysis Time Period: WEEKDAY PM PEAK DEVELOPED Intersection: ' SR40 / SR 381N Jurisdiction: WHARTON TOWNSHIP Units: U. S. Customary Analysis Year: 2016 Project ID: 2005-319 East/West Street: ROUTE 40 North/South Street: SR 381N Study period (hrs): 0.25 Intersection Orientation: EW Vehicle Volumes and Adjustments 6 Major Street Movements . 3 1 2 4  $\mathbf{T}$ R Т  $\mathbf{L}$  $\mathbf{L}$ R olume 67 558 569 19 0.91 Peak-Hour Factor, PHF 0.88 0.92 0.85 156 Peak-15 Minute Volume 19 1.52 6 22 Hourly Flow Rate, HFR . 76 606 625 Percent Heavy Vehicles -- --Median Type/Storage Undivided RT Channelized? Lanes 1 0 Configuration LTTR Upstream Signal? No No Minor Street Movements 8 10 11 12 T R Т L  $\mathbf{L}$ R Volume 46 0 53 Peak Hour Factor, PHF 0.71 1.00 0.68 Peak-15 Minute Volume 0 19 16 Hourly Flow Rate, HFR 64 0 77 Percent Heavy Vehicles 3 3 Percent Grade (%) Flared Approach: Exists?/Storage No RT Channelized? Lanes 0 1 0 Configuration LTR Pedestrian Volumes and Adjustments Movements 13 14 15 16

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Flow (ped/hr)

#### TWO-WAY STOP CONTROL SUMMARY\_

Analyst:

McMILLEN ENGINEERING .gency/Co.:

Date Performed:

11/23/2005

Analysis Time Period: SATURDAY PEAK DEVELOPED

Intersection:

SR40 / SR 381N

Jurisdiction:

WHARTON TOWNSHIP

Units: U. S. Customary

Analysis Year:

2016

Project ID: 2005-319

East/West Street: ROUTE 40

North/South Street:

SR 381N

Intersection Orientation: EW

Study period (hrs): 0.25

incorpaction of	. LCHEGGLOTT.	Д11			- u.u.y	PCTIO	· (1.125)			
	Veh	icle Volu	mes and	Adjus	stme	nts				
Major Street:	Approach	Eas	tbound	-		We	stbound	l		
-	Movement	1	2	3	- 1	4	5	6		
		<b>L</b> .	T	R	1	L	T	R.		
					<del></del>		413	62	<del></del>	
Volume	- 500	89 0.91	604 0.84				0.84	0.7	0	
Peak-Hour Facto		97	719				491	79		
Hourly Flow Rat Percent Heavy V		3	719	_			491	19 		
Mèdian Type/Sto		o Undivi				,				
RT Channelized?		Oligial	aea			/				
ki channelized: Lanes		0	1			•	1	0.		
Configuration		LT						'R		
Configuration Upstream Signal	2	71.1	No		•		No	X		•
ipscream signar	. <b>:</b>		74 O				NO			
Minor Street:	Approach	Nor	thbound			So	uthbour	ıd		
	Movement	7	8 .	9	1	10	11	12		
		I.	$\mathtt{T}$	Ŕ	1	$\mathbf{L}$	T	R		
	·			<u> </u>		· • • • • • • • • • • • • • • • • • • •				
Volume						44	0	54	_	
Peak Hour Facto						0.70	1.00	0.7	7	
Hourly Flow Rat						62	0 .	70		
Percent Heavy V		•				3	0_	3		
Percent Grade (			0				-7			
Flared Approach	: Exists?	/Storage			ŀ		_	No	/	
Lanes						0	1	0		
Configuration							LTR			
<del></del>			<del>_</del>				<del></del>			
	Delay, (	Queue Len	gth, and	d Leve	1 0	f Servi	ce			
Approach	EB	₩B		nbound				hbound		
Movement	1	4	7 8	3	9	1 2		11	12	
Lane Config	LT	1				ſ		LTR		
v (vph)	97		<del></del>	<del></del>				132		
C(m) (vph)	997							221		
a/c	0.10							0.60		
95% queue lengti								3.41		
Control Delay	9.0							42.9		
OS Delay	Э. U А							E E		
approach Delay	ъ							42.9		
Approach LOS								E E		
ahhrnacii noa								ii)		

Phone: Fax: E-Mail: TWO-WAY STOP CONTROL (TWSC) ANALYSIS Analyst: Agency/Co.: McMILLEN ENGINEERING Date Performed: 11/23/2005 Analysis Time Period: SATURDAY PEAK DEVELOPED SR40 / SR 381N Intersection: Jurisdiction: WHARTON TOWNSHIP Units: U. S. Customary Analysis Year: 2016 Project ID: 2005-319 East/West Street: ROUTE 40 North/South Street: SR 381N Intersection Orientation: EW Study period (hrs): Vehicle Volumes and Adjustments Major Street Movements 1 2 3 L T R  $\mathbf{L}$  $\mathbf{T}$ R 413 /olume 89 604 Peak-Hour Factor, PHF 0.91 0.84 0.84 0.78 Peak-15 Minute Volume 24 180 123 20 Hourly Flow Rate, HFR 97 719 491 79 Percent Heavy Vehicles \_\_\_ Median Type/Storage Undivided RT Channelized? Lanes 1 1 0 Configuration TR LT Upstream Signal? No No Minor Street Movements 8 10  $\overline{11}$ 12 Т R Т  $\mathbf{L}$ R 54 Volume 44 0 0.70 1.00 0.77 Peak Hour Factor, PHF Peak-15 Minute Volume 16 0 18 Hourly Flow Rate, HFR 62 0 70 3 Percent Heavy Vehicles 0 Percent Grade (%) Flared Approach: Exists?/Storage No RT Channelized? Lanes 1 Configuration LTR Pedestrian Volumes and Adjustments Movements 13 14 15

Flow (ped/hr)

#### TWO-WAY STOP CONTROL SUMMARY

Analyst: RHH

gency/Co.: McMILLEN ENGINEERING

Date Performed: 11/23/2005

Analysis Time Period: WEEKDAY PM PEAK DEVELOPED

Intersection: SR40 / HAWES ROAD Jurisdiction: WHARTON TOWNSHIP

Units: U. S. Customary

Analysis Year: 2016

Project ID: 2005-319

East/West Street: ROUTE 40
North/South Street: HAWES ROAD

	Vehicle			d Adju	stme	nts_			<del></del>	
Major Street: Approac		Eas	tbound					estbound		
Movemen	it 1		2	3	ļ	4	5		6	
	· L		Т	R.	1	Ļ	Т		R	
Volume	23		581				41	1	41	
Peak-Hour Factor, PHF	0.	66	0.92				0.	91	0.66	
Hourly Flow Rate, HFR	34		631				45	1	62	
Percent Heavy Vehicles	3			~-		•				
Median Type/Storage RT Channelized?		divi	ded			/.				
Lanes		0	1				1	0		
Configuration		LT						TR		
"pstream Signal?			No.	٠	ė		No			
Minor Street: Approac	h	Nor	thbound	i			Southb	ound		
Movemen			- 8	9	- 1	10	11		12	
	L <sub>.</sub>		T	R	1.	L	T		R.	
Volume		<del></del>		<del></del>		41.	0		46	
Peak Hour Factor, PHF						0.6	52 1.	00	0.66	
Hourly Flow Rate, HFR						66	0		69	
Percent Heavy Vehicles						3	3		3	
Percent Grade (%)			0				-1	0		
Flared Approach: Exis	ts?/Stor	age			/			1	No.	/
Lanes		-				•	0 1	0		
Configuration							LT	R		

Approach	_Delay, EB	Queuė WB	Le	ngt	h, and North		Ser	vice	Southbound	<del></del>	
Movement	1	4		7	8	9	1	10	11	12	
Lane Config	LT		1				}		LTR		
v (vph)	34					 			135		
C(m) (vph)	1047								304		
v/c	0.03								0.44		
95% queue length	0.10								2.17		
Control Delay	8.6								26.0		
os -	А								D		
Approach Delay									26.0		
Approach LOS									D		

Phone: E∸Mail: Fax:

TWO-WAY STOP CONTROL (TWSC) ANALYSIS

Analyst:

RHH

Agency/Co:

McMILLEN ENGINEERING

Date Performed:

11/23/2005

Analysis Time Period: WEEKDAY PM PEAK DEVELOPED .

Intersection:

SR40 / HAWES ROAD

Jurisdiction:

Units: U. S. Customary

WHARTON TOWNSHIP

Analysis Year:

Project ID: 2005-319

2016

East/West Street:

ROUTE 40 HAWES ROAD

North/South Street: Intersection Orientation: EW

Study period (hrs):

•	Vehicle	Volumes	and	Adjustmen	ts			
Major Street Movements	_ 1	2	3	- 4	5	6		
	I,	${f T}$	R	L	T	R		
\								
/olume	23	581	_		411	41		
Peak-Hour Factor, PHF	0.66	0.92			0.91	0.66		
Peak-15 Minute Volume	9	158			113	16		
Hourly Flow Rate, HFR	34	631			451	62		
Percent Heavy Vehicles	3	<b></b> -					•	
Median Type/Storage	Undi	vided		/				
RT Channelized?								
Lanes	0	1			1	0		
Configuration	I	T			T	R		
Upstream Signal?		No			No	•		
Minor Street Movements	7	8	9	10	11	12	<del></del>	
	L	'T	R	L	T	R		
Volume	·			41	0	46	·	
Peak Hour Factor, PHF				0.62	1.00	0.66		
Peak-15 Minute Volume		•		17	0	17		
Hourly Flow Rate, HFR				6 <b>6</b>	0	69		
Percent Heavy Vehicles				3	3	3		
Percent Grade (%)		0		,	-10	J		
Flared Approach: Exist:	c2/6taraa	•		,	-10	No	,	
RT Channelized?	a:/acorag	C		/		140	/	
Lanes				0	1 (	כ		
				Ü	LTR	J		
Configuration					TIK			

Movements	_Pedestrian 13	Volumes 14		justments 16	
Flow (ped/hr)	0	0	0	0 .	

#### TWO-WAY STOP CONTROL SUMMARY

Analyst:

igency/Co.: McMILLEN ENGINEERING

Date Performed: 11/23/2005

Analysis Time Period: SATURDAY PEAK DEVELOPED

Intersection: SR40 / HAWES ROAD Jurisdiction: WHARTON TOWNSHIP

Units: U. S. Customary

Analysis Year: 2016

Project ID: 2005-319

East/West Street: ROUTE 40
North/South Street: HAWES ROAD

Vehi	cle Vol	umes an	d Adju	stme	nts		
Major Street: Approach		stbound				stbound	
Movement	1	2	3	1	4 .	5	6
	L	T <sub>.</sub>	R	1	L	· T	R
Volume	28	649				400	23
Peak-Hour Factor, PHF	0.78	0.84	•			0.84	0.58
Hourly Flow Rate, HFR	35	77Ż				476	39
Percent Heavy Vehicles	3						
Median Type/Storage RT Channelized?	Undiv	ided			<i>/</i> .		
Lanes	0	1	•			1 0	
Configuration	L					TR	
Tpstream Signal?		Ио -				No	
Minor Street: Approach	, Not	rthbound	<u></u>		Soi	uthbound	
Movement	7	8	9		10	11	. 12
	L	$\mathbf{T}^{\cdot}$	R	l	L	T .	R
Volume		<del>-</del>			21	0	15
Peak Hour Factor, PHF					0.79	1.00	0.58
Hourly Flow Rate, HFR					26	0	25
Percent Heavy Vehicles		¥.			3	3	3
Percent Grade (%)		0				-10	
Flared Approach: Exists?/	Storage			/			No /
Lanes	_				0	1 0	
Configuration						LTR	

Approach	_Delay, EB	Queue WB	Le	ngt	h, and North		Ser		Southbound	
Movement	.1	4	1	7	8	9	1	10	11	12
Lane Config	LT		ĺ				1		LTR	
v (vph)	35					 			51	
C(m) (vph)	1046								251	
v/c	0.03								0.20	
95% queue length	0.10								0.74	
Control Delay	8.6								23.0	
os	A								С	
approach Delay									23.0	
Approach LOS									С	

Phone: E-Mail: Fax:

TWO-WAY STOP CONTROL(TWSC) ANALYSIS

Analyst:

Agency/Co.:

McMILLEN ENGINEERING

Date Performed:

11/23/2005

Analysis Time Period: SATURDAY PEAK DEVELOPED

Intersection:

SR40 / HAWES ROAD

Jurisdiction:

WHARTON TOWNSHIP

Units: U. S. Customary

Analysis Year:

2016

Project ID: 2005-319 East/West Street:

ROUTE 40

North/South Street:

HAWES ROAD

Intersection Orientation: EW

Study period (hrs): 0.25

Major Street Movements	Vehicle 1	2	3	4	5	6	
iajor barocc novementos	Ĺ	T	R	Ŀ	T	R	
/olume	28	649		<del></del>	400	23	
Peak-Hour Factor, PHF	0.78	0.84			0.84	0.58	
Peak-15 Minute Volume	9	193			119	10	
Hourly Flow Rate, HFR	35	772		•	476	39	
Percent Heavy Vehicles	3	112			470		
Median Type/Storage	•	vided		1.			
RT Channelized?	onar	vided		/ .			
Lanes	0	1			3 (	n	
Configuration	L'	_			T	•	
Upstream Signal?	٠ .	No			No		
opstream Signar:		. NO			IVO		
Minor Street Movements	7	8	9	10	. 11	12	
	T.	T	R	L	T	R	
Volume		<del></del>		21	0	15	
Peak Hour Factor, PHF				0.79	1.00	0.58	
Peak-15 Minute Volume		•		7	0	6	
Hourly Flow Rate, HFR				26	0	25	
Percent Heavy Vehicles				3	3	3	
Percent Grade (%)		0			-10		
Flared Approach: Exists	2/Storage	<u> </u>		1		No	/
RT Channelized?		_		•			•
Lanes				0	1 (	)	
Configuration				-	LTR		

Movements	Pedestrian 13	Volumes 14		justments 16	
Flow (ped/hr)	0	0	0	0	

#### TWO-WAY STOP CONTROL SUMMARY

Analyst: RHH

Agency/Co.: McMILLEN ENGINEERING

Date Performed: 11/23/2005

Analysis Time Period: WEEKDAY PM PEAK DEVELOPED

Intersection: SR40 / SEC. DRIVE Jurisdiction: WHARTON TOWNSHIP

Units: U. S. Customary
Analysis Year: 2016
Project ID: 2005-319

East/West Street: ROUTE 40

North/South Street: SECONDARY DRIVEWAY

Major Street.			umes and	LAGI	is cine		tbound		<del></del>
Major Street:	Approach Movement	1	stbound 2	3		4 we:	5 · 5	6	
	Movement	Ŀ	Z T	R	1	L	T	R	ė
Volume		31	591		<del></del>		427	15	
Peak-Hour Fact	or, PHF	0.90	0.90				0.90	0.90	
Hourly Flow Ra	ite, HFR	34	656				474	16	
Percent Heavy		3						<sup>-</sup>	
Median Type/St	corage	Undiv	ided ·			/			
RT Channelized	1?·								
Lanes	•	0	1				1 (	)	
Configuration	•	$\mathbf{T}_{i}$	r				TH	₹	
Tpstream Signa	11?		No				No		
Minor Street:	Approach	No	rthbound	<del></del>	<del></del>	Sot	ithbound	<u> </u>	<del></del>
	Movement	7	8.	9		10	11	12	
		Ŀ	T `	R	1	${f L}$	Τ.	R	•
Volume ·					<del></del>	14	0	28	<del></del>
Peak Hour Fact	or, PHF					0.90	0.90	0.90	
Hourly Flow Ra	ite, HFR					15 ·	0	31	
Percent Heavy	Vehicles					3	3	3	_
Percent Grade	(୫)		O .				-8		-
Flared Approac	h: Exists?/	Storage			/			No	/
Lanes						0	1 (	)	
Configuration	•						LTR		

Approach	_Delay, EB	Queue WB	Le	ngt	h, and Lev Northboun		Ser		outhbound
Movement	1	4	[	7	8	9	1	10	11 12
Lane Config	LT		j				ļ		LTR
v (vph)	34					<del></del>			46
C(m) (vph)	1068								356
v/c	0.03								0.13
95% queue length	0.10								0.44
Control Delay	8.5								16.6
os	A								С
Approach Delay									16.6
Approach LOS									С

Phone: E-Mail: TWO-WAY STOP CONTROL (TWSC) ANALYSIS Analyst: RHH McMILLEN ENGINEERING Agency/Co.: Date Performed: . 11/23/2005 Analysis Time Period: WEEKDAY PM PEAK DEVELOPED Intersection: .. SR40 / SEC. DRIVE WHARTON TOWNSHIP Jurisdiction: Units: U. S. Customary Analysis Year: 2016 Project ID: 2005-319 East/West Street: ROUTE 40 North/South Street: SECONDARY DRIVEWAY Study period (hrs): 0.25 Intersection Orientation: EW Vehicle Volumes and Adjustments 6 Major Street Movements 1 2 3 Т Т R R '  $\mathbf{L}$ /olume 31 591 427 Peak-Hour Factor, PHF 0.90 0.90 0.90 0.90 Peak-15 Minute Volume 9 164 119 4 Hourly Flow Rate, HFR 34 656 474 16 Percent Heavy Vehicles 3 Median Type/Storage Undivided RT Channelized? 0 Lanes 0 1 1 Configuration TR LT Upstream Signal? No No Minor Street Movements 8 9 12 10 11 L T R Ł  $\mathbf{T}$ R Volume Ō 28 14 0.90 0.90 Peak Hour Factor, PHF 0.90 Peak-15 Minute Volume 0 8 4 31 Hourly Flow Rate, HFR 15 0 Percent Heavy Vehicles 3 3 3 Percent Grade (%) -8 Flared Approach: Exists?/Storage No RT Channelized? Lanes 1 0 Configuration LTR Pedestrian Volumes and Adjustments Movements 15

0

0

0

Flow (ped/hr)

#### TWO-WAY STOP CONTROL SUMMARY

Analyst:

Agency/Co.:

McMILLEN ENGINEERING

Date Performed:

11/23/2005

Analysis Time Period: SATURDAY PEAK DEVELOPED

Intersection:

SR40 / SEC. DRIVE

Jurisdiction:

WHARTON TOWNSHIP

Units: U. S. Customary

Analysis Year: 2016

Project ID: 2005-319

East/West Street:

ROUTE 40

North/South Street:

SECONDARY DRIVEWAY

	Veh	icle Vol	umes and	d Adju	ıstme	ents			
Major Street:	Approach	Ea	stbound	-		W	estbound		
	Movement	1	2	3	i	4	5	6	
	•	L	T	R	.	I.	T	R	
Volume		34	636				484	17	
Peak-Hour Fact	or, PHF	0.90	0.90				0.90	0.90	
Hourly Flow Ra	ite, HFR	37	706		•		537	18	
Percent Heavy	Vehicles	3						<del></del>	
Median Type/St RT Channelized		Undiv	ided			1.			
Lanes		0	1.				1 . (	)	
Configuration		L'	$\mathbf{r}$				TI	3	
'Ipstream Signa	1.1?		No		,		No		
Minor Street:	Approach	No	rthbound	i		S	outhbound	<u></u>	
	Movement	7.	8	9	ł	10	11.	12	
		L	T	R	1	L	<b>T</b> .	. R	

	L	T	R	I	L	T .	. R	
Volume	•				15	0	30	
Peak Hour Factor, PHF					0.90	0.90	0.90	
Hourly Flow Rate, HFR					16	0	33	
Percent Heavy Vehicles					3	3、	3	
Percent Grade (%)		0				-8.		
Flared Approach: Exists?/	'Storage	<u> </u>		. /			No	1
Lanes					0	1.	0	
Configuration				-		LTR		

Approach	_Delay, 	WB			h, and Lev Northboun				outhbound
Movement	1	4	1	7	8	9	1	10	11 12
Lane Config	LT		1				ŀ		LTR
v (vph)	37								49
C(m) (vph)	1010								310
v/c	0.04				•				0.16
95% queue length	0.11								0.55
Control Delay	8.7								18.8
os	A								С
Approach Delay									18.8
Approach LOS									C

Phone: E-Mail:

Fax:

TWO-WAY STOP CONTROL (TWSC) ANALYSIS

Analyst:

Agency/Co.: McMILLEN ENGINEERING

Date Performed: 11/23/2005

Analysis Time Period: SATURDAY PEAK DEVELOPED

Intersection: SR40 / SEC. DRIVE Jurisdiction: WHARTON TOWNSHIP

Units: U. S. Customary Analysis Year: 2016

Project ID: 2005-319

East/West Street: ROUTE 40

North/South Street: SECONDARY DRIVEWAY

	Vehicle	Volumes	and Ac	ljustmen	ts		
Major Street Movements	1.	2 .	3	4	5	6	
-	· L	T,	R	L	${f T}$	R	
<u> </u>							
Volume .	34	636	•		484	17	
Peak-Hour Factor, PHF	0.90	0.90			0.90	0.90	
Peak-15 Minute Volume	9	177			134	5	
Hourly Flow Rate, HFR	37	706			537	18	
Percent Heavy Vehicles	3		<del>-</del>				
Median Type/Storage	Undi	vided		/			
RT Channelized?							•
Lanes	. 0	1			1	0	
Configuration	L	f T			TI	R	
Upstream Signal?		No			No		
Minor Street Movements	. 7	В	9	10	11	12	
	工	T	R	L	T	R	
Volume			·	15	0	30	
Peak Hour Factor, PHF				0.90	0.90	0.90	
Peak-15 Minute Volume				4	0	8	
Hourly Flow Rate, HFR				16	0	33	
Percent Heavy Vehicles				3	3	3	
Percent Grade (%)		0			-8		
Flared Approach: Exists RT Channelized?	s?/Storage	9		/		No	1
Lanes				O	1 (	3	
Configuration				U	LTR	,	

Movements	Pedestrian 13			justments 16	 
Flow (ped/hr)	0	0	0	0	 , <del>,</del> ,

Analyst: RHH

Inter.: ROUTE 40/MAIN DRIVE Area Type: All other areas

Agency: McMILLEN ENGINEERING

Date: 12/5/2005 Jurisd:

Period: WEEKDAY PM PEAK DEVELOPED

Year : 2016

Project ID: 2005-319 E/W St: ROUTE 40

N/S St: MAIN DRIVE/MARKER ROAD

e/w sc: Ro	OIF 40				EN /	5 5C. 1	NATIV DI	NI VE/F.	MANED	NOM	,	
			SI	GNALIZI	D INTERS	ECTION	SUMMAI	RY			·	
	Ea	stboun	<del>d</del>	West	bound	] Nor	thbour	nd j	Sou	thbou	ind	!
	L	T	R	L	T R	L	T	R	L	T	R	
No Lanes	1	1	0	i <u>1</u>	1 0	-¦ <del></del> 0	1	0	. 0	1	1	- [
LGConfig	j. L	ΤŔ		L	TR	ŀ	LTR	1		LT	R	1 .
Volume	62	546	9	17 ;	383. 47	13	0 :	11 i	42	0	56	1
Lane Width	110.0	11.0		110.0	11.0	1	10.0	Ì		12.0	16.0	1
RTOR Vol	1	•	2	1	. 12	I	-	3			14	l
Duration	0.25		Area :		11 other		<del>-</del>					
	<del></del>	•		_	nal Opera	tions_						
Phase Comb	inatio		2	3	4		5	6	7	8	}.	
EB Left		A	_		NB		A					
Thru			A		!	Thru	A					
Right			Α		ļ	Rìght	5 A	-				
Peds		<u>.</u>		•		Peds	_					
WB Left		A	_		SB		A					
Thru			A		•	Thru						
Right			A	•	Į.	Right	: A					
Peds					!	Peds						
IB Right					BB	***						
SB Right			~~ ~		WB	Right						
Green		7.0	33.0				12.0					
Yellow		4.0	4.0				4.0					
All Red		2.0	5.0				2.0	1 - 7		<b>70</b> 0		<b>.</b>
		Tn	+~~~~	ation T	Performan	aa Summ		le Len	gtn:	70.0	se	CS
Appr/ La	ne		Sat .		ios		Group	App	roach		<del></del>	<del>-</del>
	oup.		Rate	. rai		20110	STOOP.	, ngp	2,00011			
	pacity		s)	V/C	g/C	Delay	LOS	Dela	y LOS			
Eastbound							<del></del>					<del></del>
	51	151	1	0.46	0.10	31.9	С					
	75	164		0.79	0.47	21.3	C	22.4	C			
Westbound												
L 1	59	158	8	0.05	0.10	28.6	С				•	
	06	171	0	0.58	0.47	14.5	В	14.7	В			
Northbound												
LTR 2	42	141	1	0.05	0.17	24.3	С	24.3	С			
Southbound												
LT 2	15	125	5	0.22	0.17	25.5	С	25.2	С			
₹ 3	05	177	7	0.15	0.17	24.9	С					
Ī	nterse	ction (	Delav	= 19.7	(sec/ve	eh) I		ction	LOS :	= <u>B</u>		
<del>*</del>	'				, . – – , • •	-			· · · · <del>-</del>			

Phone: E-Mail: Fax:

OPERATIONAL ANALYSIS

Analyst:

RHH

Agency/Co:

McMILLEN ENGINEERING

Date Performed:

12/5/2005

Analysis Time Feriod:

WEEKDAY PM PEAK DEVELOPED

Intersection:

ROUTE 40/MAIN DRIVE

Area Type:

All other areas

Jurisdiction: Analysis Year:

2016

Project ID: 2005-319

E/W St: ROUTE 40

N/S St: MAIN DRIVE/MARKER ROAD

#### VOLUME DATA

	Ea:	stbou	nd	We	stbou	nd	l No	rthbo	und	Soi	uthbo	und
	L	T	R	L	T	R	1 L	T	R·	l L	T	R
		<u> </u>	9		202	47	-	0	11	<u>                                     </u>	0	F.C.
Volume	162	546	_	17	383	47	13	•	11.	42	•	56
% Heavy Veh		3	3	13	3	3 .	13	3	3	13	3	3
	10.90			10.90			10.90	0.90		10.90	0.90	0.90
אי 15 Vol	17	152	3	1.2	106	13 '	11	0	3	12	0	16
di Ln Vol	1			1			1		•			
¥ Grade	1	5		1	-5		1	-5			0	:
Ideal Sat	1800	1800		1800	1800		1	1800		I	1800	1900
ParkExist	1			1			1.			} .		
NumPark	ĺ			İ			i			Ì		
No. Lanes	,   1	. 1	0	j 1	1	0	j 0	1	0	į o	1	1
LGConfig	] L	TR		L	TR		1	$\mathbf{L}\mathbf{T}$	3	1	LT	R
Lane Width		11.0		110.0	11.0		İ	10.0		İ	12.0	16.0
RTOR Vol	I		2	i		12	į		3	ì		14
Adj Flow	69	615		18	465		Ì	12		Ĺ.	47	47
%InSharedLn	·   ·					•	i			1		
Prop LTs	!	0.00	00	i	0.00	00	i	0.25	50	Ì	1.00	00
•	įο.	.013		į o	.084		i o	.750		j 0.	.000 1	1.000
Peds Bikes	0			į o			į o			0		
Buses	0	0		[0	0		İ	0		1	0	0
%InProtPhase	9			1			į			I		
Duration	0.25		Area '	Type:	All d	other	areas			•		

#### OPERATING PARAMETERS

	l Ea	stbound	We	stbound	i	J No.	rthboun	a l	Soi	utnoo	und	
	L	T R	L	Т	R	L	Т	R [	L	T	Ŕ	i
	<b>}</b>		{			1		11				_1
Init Unmet	10.0	0.0	10.0	0.0		ļ	0.0			0.0	0.0	1
Arriv. Type	e   3	3	13	3		[	3	- 1		3	3	1
init Ext.	3.0	3.0	13.0	3.0		i	3.0	1		3.0	3.0	ł
I Factor		1.000	1	1.000		1	1.000	1		1.00	0	1
Lost Time	12.0	2.0	12.0	2.0			2.0	- 1	•	2.0	2.0	l
Ext of g	12.0	2.0	12.0	2.0	į	1	2.0	ł		2.0	2.0	-
Ped Min g	1	3.2	1	3.2	į	}	3.2	1		3.2		1

Analyst: RHH

Agency: McMILLEN ENGINEERING

Date: 12/5/2005

Period: SATURDAY AM PEAK DEVELOPED

Project ID: 2005-319

E/W St: ROUTE 40

Inter.: ROUTE 40/MAIN DRIVE Area Type: All other areas

Jurisd:

Year : 2016

N/S St: MAIN DRIVE/MARKER ROAD

			SIC	GNALIZ	ED INTERS	ECTION	SUMMA	RY			
	l Ea:	stboun			tbound		thbou		Sou	thbo	und
	į L	T .	R	L	T R	Ĺ	T	R	L,	T	R
No. Lanes		1	0		1 .0	-}	1	0	0	1	<del></del>
LGConfig	L	TR		l L	TR .	[	LTR	t. 1		ĹΤ	R
Volume	68	498	3	16	346 51	4	0	6 I	45°	0	60
Lane Width	110.0	11.0		110.0	11.0	i	10.0	1		12.0	16.0
RTOR Vol	l		1	۱ ,	13	1	•	2	-		15
Duration	0.25		Area :		All other		<del></del> .		<u>·</u>		- <del></del> -
Phase Comb	ination		2	Sig. 3	nal Opera 4 !	tions		6	7	<del></del>	3
EB Left	THACTOR	A	Z	3	4   NB	Left	A	O	,	,	3
Thru		Λ	Α		1 100	Thru	A				
Right			A		!	Right					
Peds :			А		1	Peds	. А				
WB Left		A			f I SB		A				
· · ·		А	'n		96						
Thru			A		1	Thru			•		
Right Peds			A		ļ	Rìght	. A				
					1	Peds					
IB Right					( EB	Right					
ملسلسيد (١١١)					I MD	Diamba					
		7.0	22.0		WB	Right					
Green		7.0	33.0		( WB	Right	12.0				
Green Yellow		4.0	4.0		( WB	Right	12.0 4.0				
Green Yellow					( WB	Right	12.0 4.0 2.0		~ h.h		
Green Yellow		4.0	4.0	tion :			12.0 4.0 2.0 Cyc	le Lenq	gth:	70.0	sec
Green Yellow All Red	ne	4.0 2.0 In	4.0 2.0 tersec		WB           WB         WB         WB                                     	ce Summ	12.0 4.0 2.0 Cyc	le Leng			sec
Green Yellow All Red Appr/ La	ne oup	4.0 2.0 In Adj	4.0		Performan	ce Summ	12.0 4.0 2.0 Cyc	le Leng	gth: roach		sec
Green Yellow All Red Appr/ Lan Lane Gre		4.0 2.0 In Adj	4.0 2.0 tersec		Performan tios	ce Summ	12.0 4.0 2.0 Cyc ary Group	le Leng	roach		sec
Green Yellow All Red Appr/ Lan Lane Green Grp Can	oup	4.0 2.0 In Adj	4.0 2.0 tersed Sat Rate	Ra <sup>-</sup>	Performan tios	ce Summ Lane	12.0 4.0 2.0 Cyc ary Group	le Leng	roach		sec
Green Yellow All Red Appr/ Lane Gre Grp Can	oup	4.0 2.0 In Adj	4.0 2.0 tersec Sat Rate s)	Ra <sup>-</sup>	Performan tios g/C	ce Summ Lane	12.0 4.0 2.0 Cyc ary Group	le Leng	roach		sec
Green Yellow All Red Appr/ Lan Lane Gre Grp Can Eastbound L 1	oup pacity	4.0 2.0 In Adj Flow	4.0 2.0 tersec Sat Rate s)	Ra	Performan tios g/C	ce Summ Lane Delay	12.0 4.0 2.0 Cyc ary Group	le Leng	roach y LOS		sec
Green Yellow All Red Appr/ Lan Lane Gre Grp Can Eastbound L 1: TR 7	oup pacity 51	4.0 2.0 In Adj Flow ( 151 164	4.0 2.0 tersed Sat Rate s)	0.50 0.72	erforman tios g/C 0.10 0.47	Ce Summ Lane Delay 32.5	12.0 4.0 2.0 Cyc ary_ Group LOS	Approperty Delay	roach y LOS		sec
Green Yellow All Red Appr/ Lan Lane Gre Grp Can Eastbound L 19 TR 7	oup pacity 51 76	4.0 2.0 In Adj Flow ( 151 164	4.0 2.0 tersed Sat Rate s)	0.50 0.72	9erforman tios g/C 0.10 0.47	Ce Summ Lane Delay 32.5 17.9	12.0 4.0 2.0 Cyc ary Group LOS C B	Appropriate Approp	roach y LOS B		sec
Green Yellow All Red Appr/ Lane Grp Can Eastbound L 19 TR 7	oup pacity 51	4.0 2.0 In Adj Flow ( 151 164	4.0 2.0 tersed Sat Rate s)	0.50 0.72	erforman tios g/C 0.10 0.47	Ce Summ Lane Delay 32.5 17.9	12.0 4.0 2.0 Cyc ary Group LOS C B	Appropriate Approp	roach y LOS B		sec
Green Yellow All Red Appr/ Lane Grp Can Eastbound L 19 TR 7	oup pacity 51 76	4.0 2.0 In Adj Flow ( 151 164	4.0 2.0 tersed Sat Rate s)	0.50 0.72	9erforman tios g/C 0.10 0.47	Ce Summ Lane Delay 32.5 17.9	12.0 4.0 2.0 Cyc ary Group LOS C B	Appropriate Approp	roach y LOS B		sec
Green Yellow All Red Appr/ Lane Lane Green Grp Can Eastbound L 1: TR 7: Westbound L 1: TR 80 Northbound	oup pacity 51 76 59	4.0 2.0 In Adj Flow ( 151 164	4.0 2.0 tersec Sat Rate s)	0.50 0.72 0.04 0.53	9erforman tios g/C 0.10 0.47	Ce Summ Lane Delay 32.5 17.9 28.6 13.7	12.0 4.0 2.0 Cyc ary Group LOS C B	Approper Delay	y LOS B		sec
Green Yellow All Red Appr/ Lan Lane Gre Grp Can Eastbound L 1: TR 7 Westbound L 1: TR 80 Northbound	oup pacity 51 76 59	4.0 2.0 In Adj Flow ( 151 164	4.0 2.0 tersec Sat Rate s)	0.50 0.72 0.04 0.53	9erforman tios g/C 0.10 0.47 0.10 0.47	Ce Summ Lane Delay 32.5 17.9 28.6 13.7	12.0 4.0 2.0 Cyc ary Group LOS C B	Approper Delay	y LOS B		sec
Green Yellow All Red Appr/ Lane Green Gree	oup pacity 51 76 59 04	1.0 2.0 In Adj Flow ( 151 164 158 170	4.0 2.0 tersed Sat Rate s)	0.50 0.72 0.04 0.53	9erforman tios g/C 0.10 0.47 0.10 0.47	Ce Summ Lane Delay 32.5 17.9 28.6 13.7	12.0 4.0 2.0 Cyc ary Group LOS C B	Appropriate Approp	y LOS B		sec
Green Yellow All Red Appr/ Lane Grp Can Eastbound L 19 FR 7 Westbound L 19 FR 80 Northbound LTR 23 Southbound	oup pacity 51 76 59	1.0 2.0 In Adj Flow ( 151 164 158 170	4.0 2.0 tersed Sat Rate s)	0.50 0.72 0.04 0.53	9erforman tios g/C 0.10 0.47 0.10 0.47	Ce Summ Lane Delay 32.5 17.9 28.6 13.7	12.0 4.0 2.0 Cyc ary Group LOS C B	Appropriate Approp	y LOS B		sec

Phone:

Fax:

E-Mail:

OPERATIONAL ANALYSIS\_

Analyst:

RHH

Agency/Co.:

McMILLEN ENGINEERING

Date Performed:

12/5/2005

Analysis Time Period:

SATURDAY AM PEAK DEVELOPED

Intersection:

ROUTE 40/MAIN DRIVE

Area Type:

All other areas

Jurisdiction:

2016

Analysis Year:

Project ID: 2005-319

E/W St: ROUTE 40

N/S St: MAIN DRIVE/MARKER ROAD

#### VOLUME DATA

	Ea:	stbou	nd	We:	stbou	nd	No:	rthbo	und .	l So	ithbo	und
	L	T	R	L	T ·	R	L	T	R	ļ L	T	R
•• 7	!	400		<u> </u>		6.1				.]		
Volume	[68	498	3	16	346	51	14	0	6	145	0	60
% Heavy Veh		3	3 .	13	3	3	13	3	3	13	3	3
	10.90	0.90	0.90	0.90	0.90	0.90	10.90	0.90	0.90	10.90	0.90	0.90
יK אי K 15 Vol	19	138	1	12	96	14	1	0	2	113	0	17
Hi Ln Vol							1			1		
% Grade		5		}	-5			-5		ļ	0	
Ideal Sat	1800	1800		11800	1800		1	1800		Ì	1800	1900
ParkExist			•	ĺ			Ì			1		
NumPark	İ			ĺ			ì			•	•	
No. Lanes	i ı	1	0	! 1	1	0	i o	1	0	i o	1	1
LGConfig	L	TR		L	TR		i	LT	R	i	LT	R
	10.0			10.0			i	10.0		i	12.0	16.0
RTOR Vol	1		1	1		13 ·	i	_0,0	2	<u>.</u>		15
	176	555		17	426		1	8	~	<u>'</u>	50	50
%InSharedLn	•	300		1	120		ŧ	Ū		1	•	50
Prop LTs	, 	0.00	าก	! !	0.00	nn.	1	0.50	nn	1	1.00	10
Prop RTs		.004		, ,	.099	<i>.</i>	1 0	.500	<i>-</i> 0	1 0	.000	
Peds Bikes	•	. 004		, 0.			i O.	. 500		1 0	. 000	
	10	O		10	0		. 0	0		1 0	O	0
		Ų		Įυ	U		ļ.	U		1	U	U
%InProtPhase			_ =	<u> </u>	~ '		1			1		
Duration	0.25		Area :	l'ype:	ALL	other.	areas					

#### OPERATING PARAMETERS

	Ea	sthoun	d   W	<i>l</i> estboun	ıd	No	rthbo	und	Sc	uthbo	und	- 1
	$\mid \mathbf{L}$	${f T}$	R   L	T	R	L	T	Ŕ	L	T	R	- 1
			!						1			I
Init Unmet	10.0	0.0	10.0	0.0		-	0.0		1	0.0	0.0	-
Arriv. Type	: 3	3	3	3	-		3		1	3	3	į
nit Ext.	13.0	.3.0	13.0	3.0	İ		3.0		1	3.0	3.0	].
I Factor	1 .	1.000		1.000			1.000	)	1	1.00	0	ĺ
Lost Time	12.0	2.0	12.0	2.0			2.0		1	2.0	2.0	1
Ext of g	12.0	2.0	12.0	2.0			2.0		}	2.0	2.0	- 1
Ped Min g	1	3.2	1	3.2	1		3.2		1	3.2		1

#### TWO-WAY STOP CONTROL SUMMARY

\nalyst: RHH

Agency/Co.: McMILLEN ENGINEERING

Date Performed: 11/23/2005

Analysis Time Period: WEEKDAY PM PEAK DEVELOPED

Intersection: SR40 / SMITH SCHOOL Jurisdiction: WHARTON TOWNSHIP

Units: U. S. Customary Analysis Year: 2016

Project ID: 2005-319

3OS

Approach Delay

Approach LOS

East/West Street: ROUTE 40

North/South Street: SMITH SCHOOL HOUSE RD

Α

Intersection Orie	ntation: 1	ew		· S	tudy	period	i (hrs)	: 0.25	5
·	Vehic	cle Volu	ımes and	d Adiu	stme	nts ·			
Major Street: Ap	proach		tbound				tbound		
	vement -	1	2	3	1	4	5	6	
		L	T	R	Ī	L	T .	R	
Volume		18	610				435	9	
Peak-Hour Factor,	PHF	0.67	0.94				0.94	0.67	
Hourly Flow Rate,		26	648				462	13	
Percent Heavy Veh		3							
Median Type/Storac RT Channelized?		Undivi	.ded			/			
Lanes		. 0	1				1 (	o `	
Configuration		LT					T		-
Ipstream Signal?			No	•			No	,	
Minor Street: App	oroach	Nor	thbounc	i l	<del></del>	Sou	thbound	k	
Mor	vement	7	8	9	į	10	11 ·	12	
		L	T	R	I	L	T	R ·	
Volume .	<del></del>					13	0	29	
Peak Hour Factor,	PHF					0.75	0.90	0.93	
Hourly Flow Rate,	HFR					17	0	31	
Percent Heavy Veh:	icles					3	3	3	
Percent Grade (%)			0				10		
Flared Approach:	Exists?/S	Storage			/			No	/
Lanes						0	1 (	)	
Configuration							LTR		
			. 4.3			5 A			·
7	Delay, Qu					r servi		. h	
Approach	EB			hbound		, 1		nbound	12
Movement	1	4	/	8	9	; 1		11	12
Lane Config	$_{ m LT}$	. 4				I	<u>1</u>	LTR	
v (vph)	26		***************************************					18	
C (m) (vph)	1082							356	
v/c	0.02							).13	
95% queue length	0.07						C	).46	
Control Delay	8.4						1	6.7	
00								^	

C

С

16.7

Phone: E-Mail: Fax:

TWO-WAY STOP CONTROL (TWSC) ANALYSIS

Analyst:

Agency/Co.: McMILLEN ENGINEERING

Date Performed: 11/23/2005

Analysis Time Period: WEEKDAY PM PEAK DEVELOPED

RHH

Intersection: Jurisdiction:

SR40 / SMITH SCHOOL WHARTON TOWNSHIP

Units: U. S. Customary

Analysis Year: 2016

Project ID: 2005-319

East/West Street: ROUTE 40

North/South Street: SMITH SCHOOL HOUSE RD

Major Ctreat Maramenta	_Vehicle		3		- 5	6	"- <del></del>
Major Street Movements	1	2		· 4	. Э Т	=	
•	L	T	R	L	T	R	
Volume	18	610			435	9	
Peak-Hour Factor, PHF	0.67	0.94			0.94	0.67	
Peak-15 Minute Volume	7	162			116	· 3	
Hourly Flow Rate; HFR	26	648			462	13	
Percent Heavy Vehicles	3.						
Median Type/Storage	Undi	.vided		/			
RT Channelized?							
Lanes	. 0	1			1	0	
Configuration	L	ıΤ			T	R	
Upstream Signal?		No		•	No		
Minor Street Movements	7	8	9	10	11	12	
	L	T	Ŕ	L .	T	R	
Volume	<del></del>		•	13	0	29	•
Peak Hour Factor, PHF				0.75	0.90	0.93	
Peak-15 Minute Volume				4	0	8	
Hourly Flow Rate, HFR				17	0	31	
Percent Heavy Vehicles				3	3	3	
Percent Grade (%)		0			10		
Flared Approach: Exists	s?/Storag	e		/		No	/
RT Channelized?	-						
Lanes				0	1	)	
Configuration					LTR		

Movements	_Pedestrian 13	_		justments_ 16
Flow (ped/hr)	0	0	0	0

#### TWO-WAY STOP CONTROL SUMMARY

Analyst:

Agency/Co.: McMILLEN ENGINEERING

Date Performed: 11/23/2005

Analysis Time Period: SATURDAY PEAK DEVELOPED

Intersection: SR40 / SMITH SCHOOL Jurisdiction: WHARTON TOWNSHIP

Units: U. S. Customary

Analysis Year: 2016

Project ID: 2005-319

East/West Street: ROUTE 40

Flared Approach: Exists?/Storage

Lanes

Configuration

North/South Street: SMITH SCHOOL HOUSE RD

Intersection Orientation: EW Study period (hrs): 0.25

Major Street: Approach		umes and stbound	-			stbound	
Movement	1	2	3	1	4	5	6
	L	T	R	ĺ	L	T	Ŗ
Volume	15	534				426	11
Peak-Hour Factor, PHF	0.50	0.87				0.87	0.50
Hourly Flow Rate, HFR	30	613				489	22
Percent Heavy Vehicles	3						<del>-</del> -
Median Type/Storage RT Channelized?	Undiv	ided			/		•
Lanes	0	1				1 (	כ
Configuration	$\mathbf{L}'$	T				T	₹ .
'pstream Signal?		No				No	
Minor Street: Approach	No	rthbound	<u></u>		So	ithbound	i
Movement	7	8	9	ſ	10	11	12
	L	Т	R	ł	L .	Т	R
Volume					9	0	13
Peak Hour Factor, PHF					0.40	0.90	0.60
Hourly Flow Rate, HFR		,			22	0	21
Percent Heavy Vehicles					3	3	3
Percent Grade (%)	_	0				10	

Approach	 EB	WB			Northbour	nd		Sc	outhbound
Movement ·	1	4	1	7	8	9	1	10	11 12
Lane Config	LT		I						LTR
v (vph)	30	<del></del>							43
C(m) (vph)	1049								297
v/c·	0.03								0.14
95% queue length	0.09			•					0.50
Control Delay	8.5								19.2
.os	А								С
Approach Delay									19.2
Approach LOS									С

No

LTR

Phone: E-Mail: Fax:

TWO-WAY STOP CONTROL (TWSC) ANALYSIS

Analyst:

Agency/Co.:

McMILLEN ENGINEERING

Date Performed:

11/23/2005

Analysis Time Period: SATURDAY PEAK DEVELOPED

Intersection:

SR40 / SMITH SCHOOL

Jurisdiction:

WHARTON TOWNSHIP

Units: U. S. Customary

Analysis Year:

2016

Project ID: 2005-319 East/West Street:

ROUTE 40

North/South Street:

SMITH SCHOOL HOUSE RD

Intersection Orientation: EW

Study period (hrs): 0.25

	Vehicle	Volumes	and	Adjustmen	ts		
Major Street Movements	_ 1	2	3 -		5	6	
	$\mathbf{L}$	${f T}$	R	· <u>T</u> ,	T	R	
·				·			
/olume	15	534			426	11	
Peak-Hour Factor, PHF	0.50	0.87			0.87	0.50	
Peak-15 Minute Volume	8	153			122	6 ··	
Hourly Flow Rate, HFR	30	613			489	22	
Percent Heavy Vehicles	3		<b>-</b> -		~- <u>`</u>		
Median Type/Storage	Undi	vided		<i>/</i> ·			
RT Channelized?						•	
Lanes	. 0	1			1	0	
Configuration	I	T			$\mathbf{T}^{*}$	R	
Upstream Signal?	•	ИО			No		
	·			· .		<del></del> -	
Minor Street Movements	7	8	9	10	11	12	
	L	T	R	L	T	R	
Volume		_		9	0	13	
Peak Hour Factor, PHF				0.40	0.90	0.60	
Peak-15 Minute Volume				6	0	5	
Hourly Flow Rate, HFR				22	0	21	
Percent Heavy Vehicles				3	3	3	
Percent Grade (%)		0			1.0		
Flared Approach: Exists RT Channelized?	s?/Storag	e		/		No	/
Lanes				0	1 (	)	
Configuration	•				LTR		

Movements	Pedestrian 13	Volumes 14		justments 16	
Flow (ped/hr)	0	0	0	0	

#### TWO-WAY STOP CONTROL SUMMARY

\nalyst:

RHH

Agency/Co.:

McMILLEN ENGINEERING

11/23/2005

Date Performed:
Analysis min Analysis Time Period: WEEKDAY PM PEAK DEVELOPED

Intersection: SR40 / DINNER BELL RD

Jurisdiction:

WHARTON TOWNSHIP

Units: U. S. Customary

Analysis Year: 2016

Project ID: 2005-319

East/West Street: ROUTE 40

North/South Street:

DINNER BELL ROAD

Intersection Orientation: EW

Study period (hrs): 0.25

	Vehic	le Volu	mes and	Adjus	tme	nts				
Major Street:	Approach	Eas	tbound	•		Wes	tbound			
	Movement	· 1	2	3 .	ı	4	5	6		
		L	T'	R	1	L	T	R		
					•		,			
Volume		29	555	52		15	398	42		
Peak-Hour Facto	r, PHF	0.81	0.94	0.78		0.58	0.94	0.79		
Hourly Flow Rat	•	35	590 -	66		25	423	53		
Percent Heavy V	-	3	<del>-</del>			3				
Median Type/Sto		Undivi	ded			/				
RT Channelized?						•				
Lanes		0	1. 0			0	1	0		
Configuration		LT				LT	R.			
'pstream Signal	?		No				No			
	•									
Minor Street:	Approach	Nor	thbound			Sou	thboun	d		
	Movement	7	8	9	1	10	11	12		
	•	L	${f T}$	R	Ì	L ·	${f T}$	R ·		
Volume		29	8	.18		40	3	17		
Peak Hour Facto	r, PHF	0.81	0.58	0.67		0.75	0.38	0.63		
Hourly Flow Rat	•	35	13	26		53	7	26		
Percent Heavy V		3	3 ·	3		3	· 3	3		
Percent Grade (			-4				3 ·			
Flared Approach		torage		No	1			No	/	
Lanes	,	ő	1 0		-	0	1	0		
Configuration			LTR ·				LTR			
•										

Approach	EB	MB .	Northbound	So	uthbound
Movement	1	4   7	7 8 9	10	11 12
Lane Config	LTR	LTR	LTR	1	LTR
v (vph)	35	25	.74	·	86
C(m) (vph)	1081	927	192		175
v/c	0.03	0.03	0.39		0.49
95% queue length	0.10	0.08	1.69		2.39
Control Delay	8.4	9.0	35.0+		44.0
os	Α	Α	E		E
Approach Delay		•	35.0+		44.0
Approach LOS			E		E

Phone: E-Mail: Fax:

TWO-WAY STOP CONTROL (TWSC). ANALYSIS

Analyst: RHH

Agency/Co.: McMILLEN ENGINEERING

Date Performed: 11/23/2005

Analysis Time Period: WEEKDAY PM PEAK DEVELOPED

Intersection:
Jurisdiction:

SR40 / DINNER BELL RD WHARTON TOWNSHIP

Units: U. S. Customary

Analysis Year: 2016

Project ID: 2005-319

East/West Street: ROUTE 40

North/South Street: DINNER BELL ROAD

Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments Major Street Movements 1 2 3 L.  $\mathbf{T}$  $\mathbf{T}$ R' R L 29 555 52 15 398 Volume Peak-Hour Factor, PHF 0.81 0.94 0.78 0.58 0.940.79Peak-15 Minute Volume 9 . 148 17 6 106 13 Hourly Flow Rate, HFR 35 590 66 25 423 53 Percent Heavy Vehicles 3 3 Median Type/Storage Undivided RT Channelized? 1 Lanes 0 1 Configuration LTR LTR Upstream Signal? No No Minor Street Movements 9 10 11 12 8 R  $\mathbf{T}$ R L Т L Volume 29 8 40 17 18 3 Peak Hour Factor, PHF 0.81 0.58 0.67  $0.75^{\circ}$ 0.38 0.63 Peak-15 Minute Volume 9 3 7 13 2 7 26 53 7. 26 Hourly Flow Rate, HFR 35 13 Percent Heavy Vehicles 3 3 3 3 3 Percent Grade (%) - 4 3 Flared Approach: Exists?/Storage No No RT Channelized? Lanes 0 0 0 1 0 1 Configuration LTR LTR

Movements	_Pedestrian 13	Volumes 14	_	justments 16	
Flow (ped/hr)	0	0	Ō	0	

#### TWO-WAY STOP CONTROL SUMMARY

Analyst:

Agency/Co.: McMILLEN ENGINEERING

11/23/2005 Date Performed:

Analysis Time Period: SATURDAY PEAK DEVELOPED Intersection: SR40 / DINNER BELL RD WHARTON TOWNSHIP

Jurisdiction:

Units: U. S. Customary

2016 Analysis Year:

Project iD: 2005-319

East/West Street: ROUTE 40

DINNER BELL ROAD North/South Street:

Intersection Orientation:	EW		St	udy	perio	d (hrs):	0.25	•
Veh	icle Volu	umes and	l Adjus	tme	nts			
Major Street: Approach		stbound	•			stbound		
Movement	1 .	2	3 .	- 1	4	5.	б	
•	L	T	R		L	T	R	
					70:	- 260	17	<u> </u>
Volume	21	534	31		10	360		
Peak-Hour Factor, PHF	0.75	0.87	0.63		0.68	0.87	0.70	
Hourly Flow Rate, HFR	28 -	613	49		14	4.13	24	
Percent Heavy Vehicles	· 3	- <i>-</i>			3	~-		
Median Type/Storage	Undivi	ided			/-			
RT Channelized?						•	•	
Lanes	0	1 . 0	•		0	1 0	)	
Configuration	L	rr			LI	'R		
Tpstream Signal?		No				No		•
							·	
Minor Street: Approach	Non	rthbound			Sou	thbound	l	
Movement	7	8 .	9	1	10	11	12	
	L	T	R	ŀ	L	T	R	
Volume	. 59	2	17		18	3	17	
Peak Hour Factor, PHF	0.84	0.50	0.42		0.50	0.75	0.62	•
Hourly Flow Rate, HFR	70	4	40		36	4	27	
Percent Heavy Vehicles	3	3	3		3	3	3	
Percent Grade (%)	3	<u>-</u> 4	٠,		3	3	J	
Flared Approach: Exists?	/Storage		No	1		J	No	/
Lanes	Ő	1 0		-	0	1 0	1	·
Configuration		LTR				LTR		
					_			
Delay,	Queue Ler	ngth, an	d Level	L o:	f Servi	.ce		
Approach EB	WB		hbound				bound	
Movement 1	4	7	8	9	1	.0 1	1	12

Approach	_Delay, EB	Queue Leng WB	gth, and Level of Northbound		Southbound
Movement	1	4   1	7 8 9	10	11 12
Lane Config	LTR	LTR · [	LTR	1	LTR
v (vph)	28	14	114		67
C(m) (vph)	1117	922	204		214
v/c	0.03	0.02	0.56		0.31
95% queue length	0.08	0.05	3.00		1.28
Control Delay	8.3	9.0	42.9		29.3
ios	A	Α	E		D
Approach Delay			42.9		29.3
Approach LOS			E		D

Phone: E-Mail: Fax:

TWO-WAY STOP CONTROL (TWSC) ANALYSIS

Analyst:

Agency/Co.: McMILLEN ENGINEERING-

Date Performed: 11/23/2005

Analysis Time Period: SATURDAY PEAK DEVELOPED Intersection: SR40 / DINNER BELL RD Jurisdiction: WHARTON TOWNSHIP

Units: U. S. Customary Analysis Year: 2016

Project ID: 2005-319

East/West Street: ROUTE 40

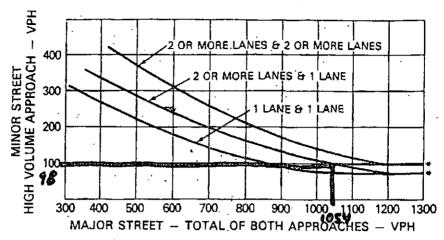
North/South Street: DINNER BELL ROAD

Major Street Movements	1	2	s and Ad 3	4	5	6	
· ·	Ĺ	T	Ř	L ·	T	Ř	
/olume	21	534	31	10	360	. 17	
Peak-Hour Factor, PHF	0.75	0.87	0.63	.0.68	0.87	0.70	
Peak-15 Minute Volume	7	153	12	4	103	6	
Hourly Flow Rate, HFR	28	613	49	14	413	24	
Percent Heavy Vehicles	3			3		- <del>-</del>	
Median Type/Storage	Undir	vided		. /			
RT Channelized?			-		=		
Lanes .	0	1	Ό	0	1	0	
Configuration	L'	ľR		$\mathbf{L}'$	rr		
Upstream Signal?		No			No		
Minor Street Movements	7	8 .	9	10	11	12	
	${f L}$	${f T}$	R	${f L}$	T	R	
Volume	59	2	17	18	3	17	
Peak Hour Factor, PHF	0.84	0.50	0.42	0.50	0.75	0.62	
Peak-15 Minute Volume	18.	1	10	9	1	7	
Hourly Flow Rate, HFR	70	4	40	36	4	27	
Percent Heavy Vehicles	3	3	3	3	3	3	
Percent Grade (%)		-4			3		
Flared Approach: Exists	?/Storage	9	No	/		No	/
RT Channelized?							
Lanes	0	1	0	0	1	0	
Configuration		LTR			LTR		

	Pedestrian	Volumes		justments	
Movements	13	14	15	Τρ	
Flow (ped/hr)	0	0	0	0	

# APPENDIX 5 SIGNAL WARRANT ANALYSIS

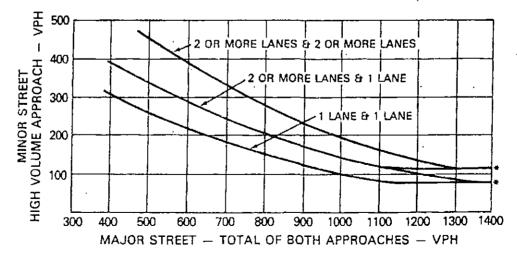
PEAK HOUR VOLUME WARRANT (COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



\*NOTE: 100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 75 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

- (xii) Four-hour volume. This warrant is satisfied when the following requirements exist:
  - (A) For each of any 4 hours of an average day, the plotted points representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour on the higher volume minor street approach (one direction only), all fall above the curve in the following graph for the existing combination of approach lanes:

#### **FOUR HOUR VOLUME WARRANT**



\*NOTE: 115 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 80 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.